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EDITORIAL

HEART DISEASE AND TUBERCULOSIS

Heart disease was the cause of 418,062 deaths in 1944, or 30 percent of all deaths reported for all ages in the United States. Tuberculosis was reported as the cause of 54,731 deaths, or 4 percent of all deaths in all age groups. Since 1934, deaths reported as caused by heart disease have increased from 303,724 to 418,062 in 1944—an increase of 38 percent over the annual deaths due to heart disease in 1934. In the same period, tuberculosis deaths declined from 71,609 in 1934 to 54,731 in 1944—a decrease of 24 percent.

This seems to indicate that heart disease is increasing in significance as a cause of death in the population as a whole, while tuberculosis is declining in significance. This is true for the entire population, on the basis of reported deaths, provided that these figures do not lead us into a misconception of the relative importance of tuberculosis as a cause of death among certain age groups. A study of data on age specific death rates discloses that, contrary to the impression given when deaths among people of all ages are considered, tuberculosis still stands out as a leading cause of death among the most important age group of the population—persons between 15 and 44 years of age. Here it is noted that tuberculosis was reported as the cause of death in 26,942 cases while diseases of the heart were reported as the cause of 25,705 deaths out of a total of 185,131. There has been no change in this relationship since 1943.

Any consideration of deaths in the total population may indicate that heart disease should receive the greatest attention. A careful weighing of the facts, however, will lead us to increase and not decrease the force of our attack on tuberculosis, which kills even more persons than heart disease in this principal productive and reproductive age

*This is the eighth of a series of special issues of PUBLIC HEALTH REPORTS devoted exclusively to tuberculosis control, which will appear the first week of each month. The series began with the Mar. 1, 1946, issue. The articles in these special issues are reprinted as extracts from the PUBLIC HEALTH REPORTS. Effective with the July 5 issue, these extracts may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 10 cents a single copy. Subscriptions are obtainable at $1.00 per year; $1.25 foreign.

group. This is not to say that heart disease among persons 15 to 44 years of age should be neglected. On the contrary, equal emphasis should be given the problem. However, unlike heart disease, tuberculosis can be effectively controlled, and available methods for that control must be utilized to the utmost and at once. The program of case-finding and follow-up should be expanded rapidly. Only in this way will the morbidity and mortality of tuberculosis be reduced. It is particularly important that the disease be eliminated among the people 15 to 44 years of age. This group constitutes our reservoir of population replenishment and is the source of our most vigorous labor supply. The continuation of a nation's vitality depends upon the health of its people. We must put an end to the costly neglect of known control methods and take up positively the offensive against a disease that kills the young, the hopeful, and the strong.

TUBERCULOSIS CONTROL IN DENMARK[1]

By JOHANNES HOLM, *Chief Tuberculosis Division, State Serum Institute of Copenhagen, Denmark; Advisory Consultant, Tuberculosis Control Division, United States Public Health Service*

Prior to the Second World War, Denmark was the country with the lowest tuberculosis mortality—3.4 per 10,000 population. As to its relative position after the war, nothing definite is known. There is, however, little reason to think that Denmark has not maintained this position. In contrast to nearly all other European countries, Denmark has had no increase in the incidence of tuberculosis during the war. In Denmark the tuberculosis mortality has remained practically unchanged from 1940 to 1945.

At the beginning of this century, when active combat against tuberculosis began, the tuberculosis mortality in Denmark was the same as in most other countries. It is relevant, therefore, to inquire into Denmark's success in combating the disease.

It is generally recognized that social conditions play an important role in the spread or retrogression of tuberculosis. There can be little doubt that Denmark's good social conditions have been an important factor in the retrogression of tuberculosis. A fairly good knowedge, therefore, of the social conditions in Denmark is required for an understanding of the decrease in the incidence of tuberculosis and of the organization of the fight against the disease in that country.

During the last half century a considerable social development has taken place in Denmark. The country cannot be designated as rich; but economic development has brought about such a change in the distribution of social goods, in favor of the entire population, that an

[1] From the Tuberculosis Control Division.

ideal state has been approached where few have too much and fewer not enough.

This social and economic development has been accompanied by a rise in the living standard for the entire population and, accordingly, improved everyday hygiene. Such conditions have been real forces in combating tuberculosis. It should be pointed out in addition that Denmark is an agricultural country, wherein the diet of the population in general is adequate. With the exception of a brief period during the first world war, there has been no nutritional crisis. Neither has there been such a crisis after the Second World War.

During the past 15 years public social care in Denmark has been elaborated to such an extent that it provides for every old person, for everybody who has become incapable of work from illness or invalidity, and for the unemployed. It should be emphasized that since 1933 every person over 14 years of age has been obliged by law to become a member of a sick benefit club, by means of which free medical advice, free hospitalization and, in part, free medicine are obtained.

HISTORY OF THE CONTROL OF TUBERCULOSIS IN DENMARK

Active control of tuberculosis began in Denmark in the first years of this century. As early as 1905 Denmark adopted its first tuberculosis law, which made it compulsory for every physician to report by a special certificate every instance of pulmonary tuberculosis which he diagnosed or had contact with, and also every instance of death of a tuberculous patient. Thus, since 1905, fairly reliable statistics have been available for tuberculosis mortality and morbidity. Figures 1 and 2, illustrate the decrease in tuberculosis mortality until 1944. On the whole the mortality decreased gradually, except for a temporary rise during the first world war.

When the active combat against tuberculosis was initiated, stress was laid on the primary task of obtaining necessary accommodations for the isolation and treatment of tuberculous patients. When this was accomplished, tuberculosis dispensary work was undertaken. The necessary number of beds in hospitals and sanatoria was obtained in part through private philanthropy, through the work of the Danish National Association for the Combating of Tuberculosis, and, to a large extent, through public grants.

Table 1 shows these developments.

From table 1 it will be seen that the required number of beds for the treatment of tuberculous patients was attained in the early twenties, and that Denmark now may be said to be extraordinarily well supplied with beds for tuberculous patients. There is more than 1 tuberculosis bed per 1,000 inhabitants. Because tuberculosis morbidity and mortality are both rather low, this means that in Denmark there are beds enough for the isolation of all patients with

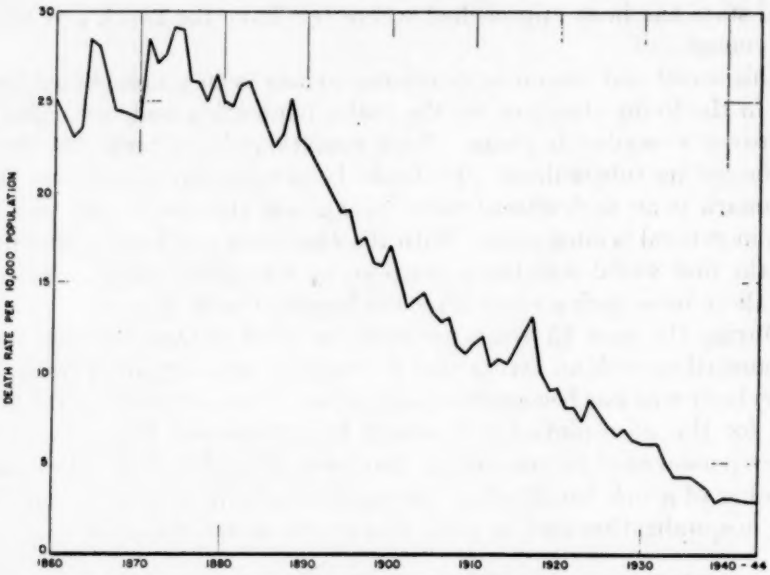

FIGURE 1.—Pulmonary tuberculosis death rate per 10,000 population, Denmark, 1860–1944.

pulmonary tuberculosis in the last, highly infectious stage and even ample accommodations for the treatment of newly diagnosed cases. The adequacy of beds, and the fact that treatment in tuberculosis institutions is free of charge to anybody who is not really well-to-do, played a great role in the favorable outcome of the attack against tuberculosis.

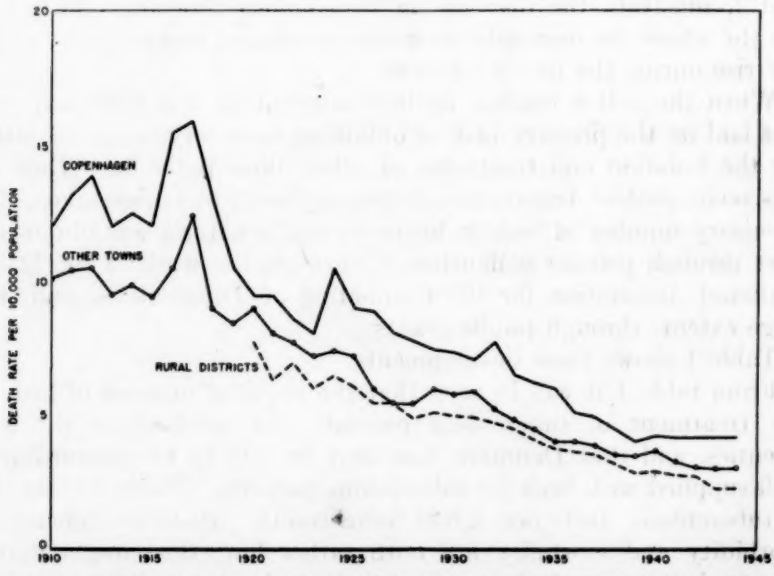

FIGURE 2.—Pulmonary tuberculosis death rate per 10,000 population, areas of Denmark, 1910–44.

TABLE 1.—*Number of beds for tuberculous patients in Denmark for selected years since 1900*

Year	Number of beds for tuberculosis	Tuberculosis beds		
		Per 10,000 inhabitants	Per newly reported cases of pulmonary tuberculosis	Per annual death from pulmonary tuberculosis
1900	278	1.1		
1906	1,319	5		
1912	2,565	9.3		
1920	3,064	9.9	0.6	1.3
1928	3,607	10.1	.9	1.8
1936	4,013	10.8	1.2	2.8
1943	4,318	10.9	1.3	3.9

As early as 1908 a few tuberculosis dispensaries were instituted in Denmark. Not until the late twenties, however, did the erection of modern tuberculosis dispensaries really gather headway; and not until 1944 was this development completed. Since 1944, however, the entire country has been served by tuberculosis dispensaries.

In Denmark every county has its own independent institution for the control of tuberculosis. In most instances the center of this organization is a large central tuberculosis dispensary with various branches situated in the larger towns of the county. The chief of such a central tuberculosis dispensary is always a specialist, who, as a rule, has charge of the treatment of the tuberculous patients in the county, because he is the chief physician of the tuberculosis hospital of the county. It has proved to be of great advantage to have the same chief for the tuberculosis dispensary and tuberculosis hospital, so that patients are continuously in the charge of the same physician.

The tuberculosis dispensary is considered, within its functional region, the center of tuberculosis control. This region is most often a county with 100,000 to 200,000 inhabitants.

The known cases of tuberculosis, especially the particularly infectious, are under the observation of the tuberculosis dispensary, partly through frequent examinations of the patients in the dispensary and partly by visits of nurses to homes. The patients are given instruction to prevent the spread of infection. The tuberculosis dispensary provides the patient with a glass for sputum, sometimes bedclothing and laundry service. Occasionally, if required, the dispensary procures better dwellings for the patients. Indeed, all the social aid given the tuberculous patients is distributed through the tuberculosis dispensary and it is very important that the dispensary come in contact in this way with all tuberculous patients. At the same time, the dispensaries insist that their directions for the prevention of the spread of tuberculosis be followed implicitly.

When new cases of tuberculosis are reported the dispensary carries out a thorough examination of the family and close contacts. All

other patients are referred to the dispensary by the general practitioner; persons who apply independently to the dispensary for examination are not admitted.

In recent years the tuberculosis dispensaries have gradually extended their diagnostic activities with a broader interpretation of the concept, "tuberculous milieu." Thus it is the general rule now that places of employment where tuberculosis among the workers has been ascertained are examined by the tuberculosis dispensary; and in the last years it has even become customary for many large organizations to have their entire personnel examined for tuberculosis at regular intervals. Finally, quite recently, the tuberculosis dispensaries have begun so-called universal examinations, during which the entire population of a given district—occasionally only a certain age class—is requested to meet for examination.

Even though the individual tuberculosis dispensaries, as mentioned, are functioning as independent units, they still cooperate closely and have considerable mutual contact. This is practicable because Denmark is small enough to enable all the chiefs of the dispensaries to meet at regular, fairly short intervals and to agree on the technique of the examination as well as to estimate the results of control measures.

EXAMINATION FOR TUBERCULOSIS

Because the way in which the examination for tuberculosis is carried out is of fundamental significance to the entire work of a tuberculosis dispensary, it is appropriate to review briefly the performance of such an examination in Denmark. Such examination has additional interest because it differs in some essential respects from the manner of examination in other countries.

In Denmark the examination for tuberculosis invariably includes a tuberculin test, roentgenography, and examination of sputum or gastric lavage for the presence of tubercle bacilli.

1. Tuberculin test.—For over 10 years it has been the general rule to perform a tuberculin test on every person examined for tuberculosis. This is done, among other reasons, to secure a BCG vaccination if the person is a nonreactor.

Everywhere in Denmark the tuberculin test is carried out with the same technique and with precisely the same tuberculin. Because of this practice, the results obtained for the various districts are directly comparable. The Mantoux test is the principal method, and the tuberculin is distributed once a month as solutions ready for use, from the State Serum Institute to all tuberculosis dispensaries, hospitals, and many practicing physicians. The intracutaneous test is carried out exclusively with purified tuberculin (P. P. D.), and in most cases solutions of two potencies are sufficient, the first test being made with

1 or 3 T. U. while the final dose is always 100 T. U.[2] The reaction is read 3 days after the injection. Redness and infiltration with a diameter of 8 mm. are considered the lower limit for a positive tuberculin reaction. For children under 10 years—particularly very young children—a Moro patch test is frequently employed instead of the first Mantoux test. The tuberculin ointment used for this test is likewise produced and distributed by the State Serum Institute.

2. Bacteriological examination.—During the last 15 years, increasing importance has been attached to the systematic examination for tubercle bacilli in every patient suspected of having tuberculosis. This is done to determine with certainty the diagnosis, prognosis, and treatment and to help the tuberculosis dispensaries determine whether the individual patient is infectious. The small size of the country has made it practicable to centralize the bacteriological examination so that cultivation for tubercle bacilli is carried out in only one place for the entire country, namely, the Tuberculosis Division of the State Serum Institute, which is the central tuberculosis laboratory for all of Denmark. This practice permits a far greater certainy in examination. At the same time the work is facilitated for the individual tuberculosis dispensaries, hospitals, and sanatoria. In Denmark, all distances are so short that the transport of the material for examination involves no difficulty and no marked delay of the result.

In Denmark, great importance has always been attached to examination of the sputum, and since 1905 this form of examination, in a number of special diagnostic stations instituted all over the country, has been free of charge for all practicing physicians. In these stations the sputa are examined only microscopically. In recent years, however, the microscopic examination has been combined to a large extent with cultivation from the sputum for tubercle bacilli. When this is done the sputa must be sent to the State Serum Institute. This development is a natural result of the experience that tubercle bacilli are found far more frequently by cultivation than by limiting the examination of the sputum to microscopy, especially when the sputum contains but relatively few tubercle bacilli. Cultivation further offers the guarantee that the acid-fast and alcohol-fast bacilli which are found on microscopy actually are tubercle bacilli and not saprophytes. So in Denmark it has become the general rule that, even when direct microscopy shows tubercle bacilli, cultivation has to be carried out at least once for each patient in order to establish the diagnosis of tubercle bacilli. In table 2 a comparison is made between the outcome of the microscopic examination and cultivation from sputa examined in the State Serum Institute during the period 1943–44.

[2] 1 T. U. (tuberculin unit) is 1/50,000 mg. standard P. P. D.=1/100 mg. standard Old Tuberculin.

TABLE 2.—*Comparison of results of sputa examinations by microscopy and cultivation of sputa in the State Serum Institute, 1943–44*

Examination of sputum specimen by microscopy	Total	Number of colonies cultivated from sputum					
		5 and under	6–20	21–100	Over 100	Subtotal positive to sputum cultivation	None
Total	26,571	1,184	685	833	2,285	[1](4,987)	21,584
+++Tubercle bacillus	844	5	----------	18	809	(832)	12
++ Tubercle bacillus	464	4	3	16	431	(454)	10
+ Tubercle bacillus	847	21	39	128	624	(812)	35
(Subtotal positive to microscopy)	[2](2,155)	(30)	(42)	(162)	(1,864)	(2,098)	[3](57)
Negative	24,416	1,154	643	671	421	[4](2,889	21,527

[1] 4,987 or 18.8 percent of total examinations were positive by cultivation of sputa.
[2] 2,155 or 8.1 percent of total examinations were positive by microscopy.
[3] 57 examinations were positive to microscopy, but negative to cultivation of sputa.
[4] 2,889 examinations were negative to microscopy but positive to cultivation of sputa, (57.9 percent of total number positive to sputum cultivation).

Gastric lavage has been employed in Denmark since 1930, not only in children, but also in adults. In recent years this method of examination has been adopted increasingly in the tuberculosis dispensaries. It is now the general rule for every patient who on X-ray films of the chest shows roentgenographic changes suggestive of tuberculosis to be subjected to a thorough bacteriological examination. This consists in examination of the sputum (microscopy+cultivation) if the patient produces any expectorate. If the patient does not raise sputum, gastric lavage is performed. Gastric lavage is further employed extensively for control examination in patients who previously discharged tubercle bacilli. In the tuberculosis dispensaries every such patient has to submit to a thorough bacteriological examination at least once a year, and for nonexpectorating patients this means gastric lavage. This bacteriological examination is carried through in every case of former bacilli carriers until the examination has shown no tubercle bacilli for at least 3 years in succession.

Table 3 gives the number of such bacteriological examinations performed in the State Serum Institute in the past 5 years, illustrating the great increase in the employment of cultivation from the sputa and gastric lavage examination.

TABLE 3.—*Specimens cultivated for tubercle bacilli in the State Serum Institute, 1941–45*

Specimen received	1941	1942	1943	1944	1945
Total	20,721	26,267	38,871	45,306	51,126
Gastric lavage	9,542	12,307	16,821	19,620	20,898
Sputum	4,905	6,259	12,071	15,710	20,269
Pleural effusion	1,327	1,578	1,769	1,985	2,545
Spinal fluid	359	544	531	709	563
Urine	2,508	3,407	4,551	4,649	4,606
Pus, tissue, etc.	2,080	2,172	3,128	2,633	2,545

3. Roentgenological examination.—Every tuberculosis dispensary has X-ray equipment. In Denmark no examination for tuberculosis is considered adequate unless the lungs are examined roentgenologically. In most dispensaries fluoroscopy is employed for continuous control, and it is utilized at every examination in the tuberculosis dispensary. In recent years several tuberculosis dispensaries have been equipped with a small film X-ray unit, and a few dispensaries have also purchased mobile small film units for examination outside the dispensary. For final diagnosis a large celluloid film is always taken of every person with suspect findings on small film or by fluoroscopy.

In order to obtain comparable results from the various tuberculosis dispensaries, all the tuberculosis dispensaries agreed some years ago to employ a uniform method for registering the results of examinations. These results are recorded after the following code.

CODE FOR CLASSIFICATION OF PULMONARY TUBERCULOSIS[6]

First digit (bacillary aspects)

1. Gastric lavage cultures: —T. B.
2. Sputum, cultures: —T. B.
3. Sputum, microscopy: —T. B. No further examination.
4. No expectoration. Gastric lavage not performed.
5. Gastric lavage, cultures: +T. B.
6. Sputum, cultures: +T. B.
7. Sputum, microscopy: +T. B. (a few bacilli).
8. Sputum, microscopy: ++T. B. (several bacilli).
9. Sputum, microscopy: +++T. B. (numerous bacilli).

Second digit (X-ray aspects)

0. No demonstrable processes.
1. Processes unilateral; no suggestion of cavitation.
2. Processes bilateral; no suggestion of cavitation.
3. Processes unilateral; suspicion of cavitation.
4. Processes unilateral; distinct cavitation.
5. Processes bilateral; suspicion of cavitation on one side.
6. Processes bilateral; distinct cavitation on one side.
7. Processes bilateral; suspicion of cavitation on both sides.
8. Processes bilateral; distinct cavitation on one side, cavitation suspected on the other side.
9. Processes bilateral; distinct cavitation on both sides.

[6] This code was developed in Copenhagen in 1939 by Dr. Herman E. Hilleboe, Dr. Knud Winge, Dr. Sigrid Holm, and Dr. Johannes Holm.

CODE FOR CLASSIFICATION OF PULMONARY TUBERCULOSIS—con.

Third digit (X-ray aspects)

0. No demonstrable infiltration.
1. <⅓ lung involved; infiltration scattered.
2. <⅓ lung involved; infiltration scattered and dense.
3. <⅓ lung involved; infiltration dense.
4. ⅓–1 lung involved; infiltration scattered.
5. ⅓–1 lung involved; infiltration scattered and dense.
6. ⅓–1 lung involved; infiltration dense.
7. >1 lung involved; infiltration scattered.
8. >1 lung involved; infiltration scattered and dense.
9. >1 lung involved; infiltration dense.

By means of the above code the more important results in a given case can be recorded by means of a figure which includes only 3 digits, the first signifying the result of the bacteriological examinations, and the last two indicating the outcome of the roentgenological examination.

The same classification of results of examination is employed in the offlcial statistics of Denmark, and the information required for codification of the results is requested in every certificate that records a new case of tuberculosis. The figures recorded in table 4 are taken from the official statistics and they present a comprehensive impression of the stage at which pulmonary tuberculosis is diagnosed in Denmark. It is of particular interest to note that over one-half of the cases have been diagnosed when the disease processes were localized in one lung alone. It can be observed that unquestionable cavitation was encountered only in about one-fifth of the cases at the time when the lesion was first recognized.

TABLE 4.—*Percent of newly reported cases of pulmonary tuberculosis according to coded classifications showing selected data, in Denmark, 1941–44*

Selected data	Percent of newly reported cases			
	1941	1942	1943	1944
Tubercle bacilli in sputum or gastric lavage	67.0	69.5	76.0	79.6
Definite cavity formation	23.5	19.7	18.2	20.6
Unilateral lung processes	51.0	56.1	55.1	52.1
Bilateral lung processes	40.3	35.1	32.1	32.7

EPIDEMIOLOGICAL ASPECTS OF TUBERCULOSIS IN DENMARK

As both tuberculosis mortality and morbidity have been relatively low in Denmark over a number of years, the epidemiological aspects of tuberculosis in Denmark today have interest and significance.

In Denmark the occurrence of tuberculosis among cattle has had great influence on the prevalence of tuberculosis in man. A discussion

of this aspect of the problem is a natural prelude to subsequent epidemiological considerations.

INFLUENCE OF TUBERCULOSIS AMONG CATTLE ON THE INCIDENCE OF TUBERCULOSIS IN MAN

Although the combat against tuberculosis among cattle in Denmark had its beginning in the first years of this century, little real progress was made until the middle thirties. Around 1930 it was still highly prevalent, but the energetic fight against this disease, waged during the past 10 years (after the Bang method) has now greatly reduced its incidence. At present, the islands are practically free from tuberculosis among cattle, and in north and east Jutland the disease is only slight in extent. The incidence in south and west Jutland, however, is still high. In these parts of the country a very active fight against the disease has been inaugurated, and it will be but a few years before Denmark is free of bovine tuberculosis.

Tuberculosis among cattle has exerted its influence on the incidence of tuberculosis in man in two ways: the transmission of the infection from cattle to man has taken place indirectly through the milk, and directly as a result of contact with the tuberculous animals. These modes of infection were thoroughly investigated.[3] It was learned that even though the transmission of tubercle bacilli through milk results in an infection which manifests itself by a positive tuberculin reaction in a great number of persons, it is only in exceptional cases, particularly in infants, that transmission through milk produces tuberculous lesions. On the other hand, the infection resulting from direct contact with tuberculous cattle has produced genuine tuberculous lesions in a high percentage of cases. It has been practicable to ascertain this fact from the systematic typing performed in every cultivation for tubercle bacilli. Both in pulmonary and extrapulmonary tuberculosis, the bovine type of tubercle bacillus is found almost exclusively in the rural population, and here it can be traced to direct transmission of the infection from the animals. In those parts of the country where tuberculosis among cattle has high prevalence, nearly half of the cases of pulmonary tuberculosis in farmers have been shown to be produced by the bovine type of tubercle bacillus.

TABLE 5.—*Percent of herds reacting to tuberculin, Jutland, the Islands and Denmark, 1937–45*

Year	Jutland	Islands	Entire Denmark	Year	Jutland	Islands	Entire Denmark
1937	80.3	63.9	73.5	1942	41.1	6.4	28.8
1938	72.9	42.9	62.0	1943	28.7	3.4	19.7
1939	67.7	31.6	54.6	1944	20.6	0.9	13.7
1940	60.6	19.2	38.3	1945	13.7	0.1	8.9
1941	53.2	11.5	28.8				

[3] Madsen, Th.; Holm, Johannes; Jensen, K. A.; Epidemiology of Tuberculosis in Denmark, Copenhagen, 1942. Amplification for much of the material in this article is presented in this work.

As tuberculosis among cattle decreases in a given district, the incidence of bovine tuberculosis in man also decreases. When tuberculosis among cattle has been eradicated for some years, the bovine type will no longer be demonstrable as the cause of tuberculosis in man. This is surprising because *a priori*, it would be expected that persons with bovine pulmonary tuberculosis would spread the infection with the bovine type of the tubercle bacillus. That this is not the case shows, as do other investigations, that the type characters of the tubercle bacilli are not constant. After staying in the human organism for some time, the bovine type of the tubercle bacilli will change in character in such a way as to be diagnosed as the human type.

There can be no doubt that the eradication of tuberculosis among cattle removes the cause of numerous cases of tuberculosis in farmers. Most likely, tuberculsois among cattle has been responsible for the fact that in some parts of Denmark tuberculosis morbidity and mortality were greater in the rural districts than in the towns.

As cultures for the growth of tubercle bacilli are made in the State Serum Institute from practically every patient with tuberculosis, and as the demonstrated tubercle bacilli invariably are typed at the same time, it has been possible in this institute to keep a card index of the demonstration of tubercle bacilli for practically all the tuberculous patients in Denmark. The following tabulations are compiled on the basis of this index.

From table 6, which is based upon all typings made in the State Serum Institute in Copenhagen since 1932, it is evident that tubercle bacilli of the bovine type are found far more frequently in extrapulmonary tuberculosis than in pulmonary. In particular, tuberculosis of the cervical lymph glands is very often brought about by the bovine type. As a matter of fact, this lesion, which previously was very common among the young in the rural population of Denmark, has become a rare affection in recent years.

TABLE 6.—*Relative frequency of bovine type bacillus in patients with pulmonary and extrapulmonary forms of tuberculosis*

Form of tuberculosis	Type of tubercle bacillus		
	Total human and bovine	Bovine	
		Number	Percent of total
Pulmonary	18,231	756	4.1
Sputum	7,378	403	5.5
Gastric lavage	9,611	283	2.9
Pleural effusion	1,242	70	5.6
Extrapulmonary	4,186	829	19.8
Urine	1,207	146	13.2
Spinal fluid	845	162	19.2
Bone-joints	710	122	19.2
Cervical lymph glands	585	200	34.2
Other lymph glands	830	190	22.4

From table 7, which, in contrast to table 6, is based upon cultivations only from tuberculous patients who were known to be alive on January 1, 1944, it will be noticed that as many as 3½ percent of all the patients with pulmonary tuberculosis still present tubercle bacilli of the bovine type, and this percentage is fairly constant for all age classes. In cases of extrapulmonary tuberculosis children, and young people particularly, show the presence of tubercle bacilli of the bovine type.

That tuberculosis among cattle has had a great influence on the percentage of positive tuberculin reactions in the Danish population is illustrated by the extensive examinations for tuberculosis carried on in recent years by the State Serum Institute.[4] The percentage of positive tuberculin reactions varied greatly in the different parts of the country, depending on the extent of tuberculosis among the cattle.

TABLE 7.—*Relative frequencies of bovine type bacillus in patients with pulmonary and extrapulmonary forms of tuberculosis by age groups; data compiled for patients living on January 1, 1944*

Age groups	Pulmonary tuberculosis			Extrapulmonary tuberculosis		
	Total human and bovine	Bovine		Total human and bovine	Bovine	
		Number	Percent		Number	Percent
Total	11,072	384	3.5	1,454	204	14.0
0–4 years	473	18	3.8	91	31	34.1
5–9 years	476	15	3.2	71	20	28.2
10–14 years	519	7	1.3	43	7	16.3
15–19 years	1,457	51	3.5	130	23	17.7
20–24 years	2,282	68	3.0	190	24	12.6
25–29 years	1,787	67	3.7	177	29	16.4
30–34 years	1,267	42	3.3	130	18	13.8
35–39 years	860	30	3.5	115	13	11.3
40–44 years	563	23	4.1	105	10	9.5
45–49 years	413	13	3.1	81	7	8.6
50–54 years	295	15	5.1	73	5	6.8
55–59 years	242	12	5.0	63	9	14.3
60–64 years	171	9	5.3	61	5	8.2
65–69 years	120	5	4.1	43	2	4.7
70 and over	139	9	6.5	70	1	1.4
Unknown	8			11		

From figures 3 and 4 it will be seen that in those parts of the country where tuberculosis among cattle was eradicated long ago (Bornholm) or where it has been merely of slight extent for several years (Zeeland), the reaction percentage among children and young people is low, whereas it is very high in the parts where tuberculosis prevails among cattle (South Jutland).

When, in a given part of the country, tuberculosis among cattle is eradicated, the reaction percentage for the population falls abruptly, and this decline manifests itself first among the children. From table 8, which shows the tuberculin reaction percent for the youngest children in the schools of Copenhagen, it will be noticed that this percentage has decreased quite considerably during the last 8 years.

[4] See footnote (3).

In Copenhagen, infection with tubercle bacilli through milk has been eliminated since 1936, and there can be little doubt that this explains the marked fall in the reaction percentage.

TABLE 8.—*Percent of boys and girls positive to tuberculin tests during first year in school, Copenhagen 1937–45*

School Year	Percent positive to tuberculin by sex		School Year	Percent positive to tuberculin by sex	
	Boys	Girls		Boys	Girls
1937–38	18.1	16.6	1941–42	10.4	10.1
1938–39	15.0	15.8	1942–43	8.2	7.2
1939–40	13.0	12.3	1943–44	7.6	7.0
1940–41	12.3	11.7	1944–45	6.9	5.6

A more direct expression of the influence of tuberculosis among cattle on the spread of tuberculous infection in man is obtained by estimating the inversion rate and the reversion rate among the persons examined. By repeated tuberculin tests on previously tuberculin-tested persons the percentage of previously tuberculin-negative persons who become tuberculin-positive within a certain period (inversion rate) can be estimated. These tests also serve as a basis for estimating the percentage of former tuberculin-positives who lose their sensitiveness to tuberculin (reversion rate). Since in Denmark the Mantoux tuberculin test is performed with as high a dosage as 100 T. U., the calculations of the inversion rate and reversion rate are made accordingly. A person reacting negatively to a Mantoux test with 100 T. U. is called an inverter if he later reacts to the same test or a test with a lower dose of tuberculin. A person reacting to a Mantoux test with 100 T. U., or lower dose of tuberculin, is called a reverter if he later reacts negatively to a Mantoux test with the dose 100 T. U.

In the districts recorded in table 9 the incidence of human tuberculosis is about the same, whereas that of tuberculosis among cattle differs greatly. Where tuberculosis among cattle can be excluded, we find a fairly low inversion rate (a few percent annually) and a relatively high reversion rate (3 to 4 percent annually), whereas in districts with tuberculosis prevalent among the cattle there is a considerably higher annual inversion rate (about 10 percent) and a minimal yearly reversion rate (0.2 percent).

TABLE 9.—*"Inversion rate" and "reversion rate" for school children in different areas of Denmark by selected years*

Area	Tuberculosis in cattle	Tuberculin testing of school children	
		Annual inversion rate per 100	Annual reversion rate per 100
Hadersley Town 1935–38	(++)	10.2	0.2
Hadersley County 1936–38	++	5.9	.2
Nakskov Town 1932–35	0	2.3	3.6
Bornholm 1937–40	0	2.7	3.6

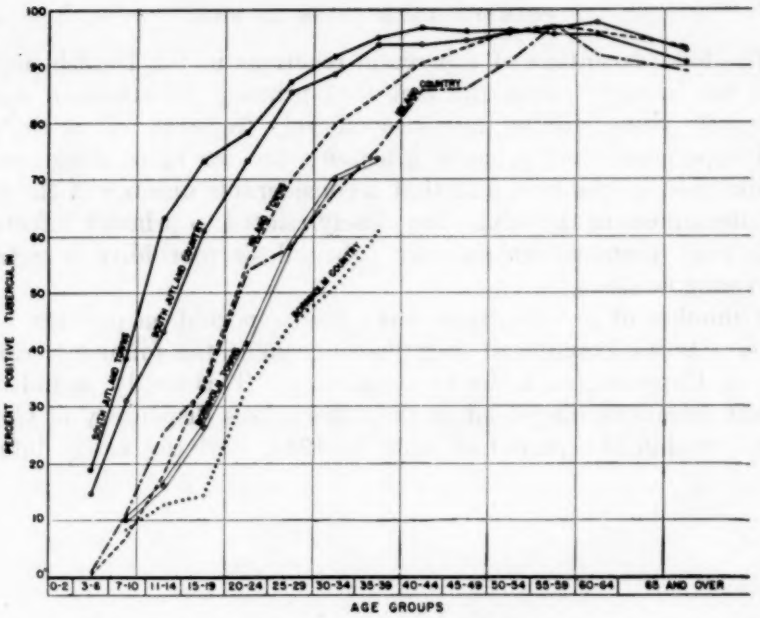

FIGURE 3.—Tuberculin tests performed by the State Serum Institute, by age groups, 1941–44.

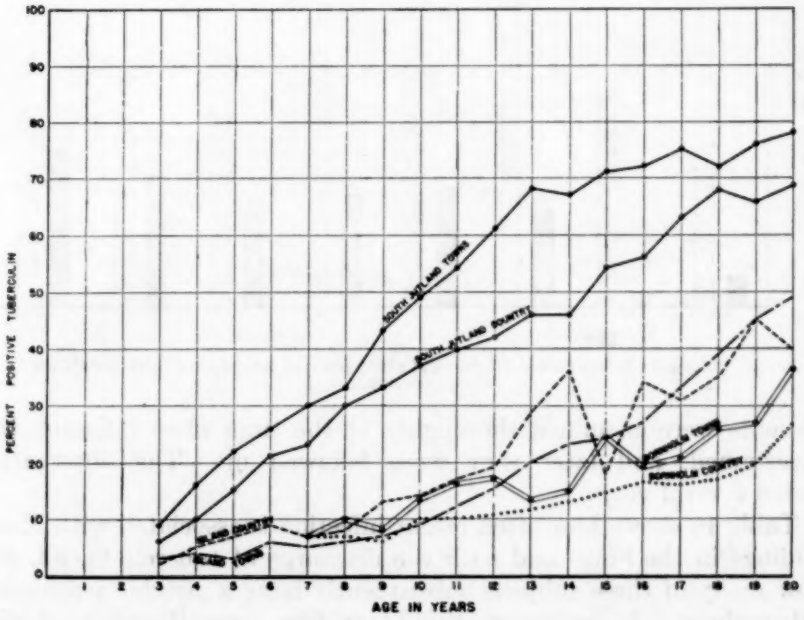

FIGURE 4.—Tuberculin tests performed by the State Serum Institute, by selected ages, 1941–44.

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PRIMARY INFECTIONS IN MAN

The low percentage of tuberculin reactions in the Danish population has brought about the fact that primary infections in adults, especially young adults, have become very frequent. It is the general experience that primary infections are far more dangerous in adults than in children, and that a considerable number of the cases of tuberculosis in the adults are closely related to primary infections. This may perhaps explain why tuberculosis morbidity is greatest for young adults.

A number of investigations have been reported on primary infections. As an example of such investigations, the following, carried out in Copenhagen, is to be mentioned. This study included all recent infections diagnosed in the tuberculosis dispensary of Copenhagen within the period of 1936 to 1941. All the newly infected

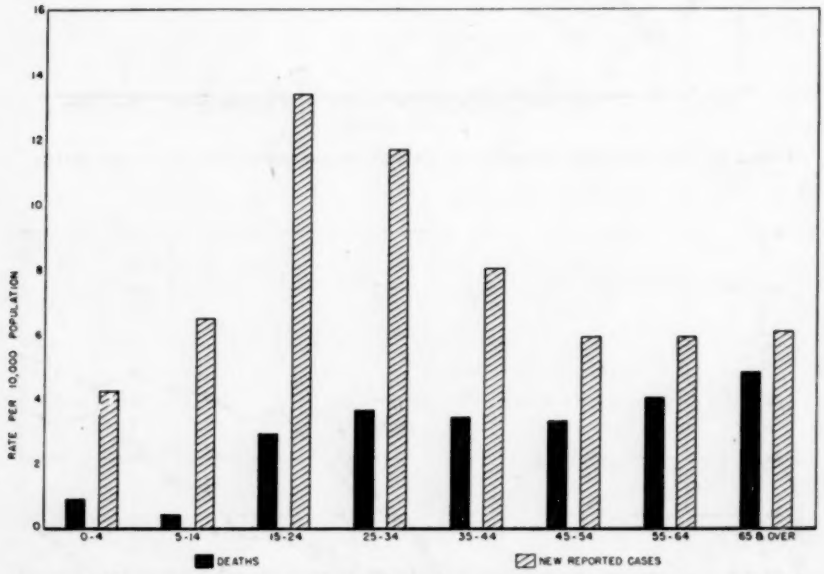

FIGURE 5.—Pulmonary tuberculosis death rate and newly reported case rate per 10,000 population by age groups, Denmark, 1944

patients were examined thoroughly at the time when infection was ascertained, and later they were followed up. The observation lasted several years.

Table 10 shows how often recent infection is associated with X-ray findings in the lungs and with the discharge of tubercle bacilli, and how many of these subjects subsequently have a genuine pulmonary tuberculosis. A shadow on the X-ray film, even if assiciated with discharge of tubercle bacilli, is not considered enough to give a diagnosis of a case of genuine pulmonary tuberculosis. This diagnosis is made only when subsequent follow up shows a spread of the

disease in the lungs. It will be noticed that relatively more children get demonstrable roentgenographic findings in the lungs and show tubercle bacilli, whereas relatively far more adults develop genuine tuberculosis.

The same investigation includes also some interesting observations on the treatment of the primary infection. It has been found that treatment of the primary infection does not prevent a later propagation of tuberculosis, and hence there is a tendency now to delay treating the primarily infected persons, with X-ray findings in the lungs, in a hospital or sanatorium. Such persons are kept under close observation in the tuberculosis dispensary and no particular treatment is recommended until evidence of propagation of the processes is apparent.

TABLE 10.—*Follow-up study of inverters to tuberculin, Copenhagen, 1936–41 (after Sigrid Holm)*

Inverters	Total	First examination at time of inversion				Subsequent findings after several years follow-up				
		X-ray findings		Tubercle bacilli demonstrated		X-ray findings		Genuine tuberculosis		
									Percent—	
		Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Of total	Of X-ray findings
Total	2,298	437	19.0	176	7.7	492	21.4	81	3.5	16.5
Children 1–6 years	288	93	32.3	38	13.2	96	33.3	3	1.0	3.1
Children 7–14 years	732	163	22.3	59	8.1	171	23.4	10	1.4	5.6
Adults, male	695	102	14.7	42	6.0	125	18.0	35	5.0	28.0
Adults, female	583	79	13.6	37	6.3	100	17.2	33	5.7	33.0

SOURCE OF THE TUBERCULOUS INFECTION IN MAN

Tuberculosis has gradually become a fairly infrequent disease in Denmark. Therefore, in those parts of the country where tuberculosis among cattle has been eradicated there is opportunity to investigate the source of infection in the cases of persons who acquire tuberculosis. Thus it has been found that the already recognized case of infectious pulmonary tuberculosis plays no decisive role in spreading the disease. When the physician reports a newly diagnosed case of tuberculosis, he must state the occasion on which the diagnosis was made. This affords some valuable information—as is evident from table 11 which was compiled from the official statistics.

From table 11 it will be noticed that in 1944 only about one-tenth of the new cases were diagnosed on examination of contacts and household (milieu) of the already recognized cases of tuberculosis. In 1944 nearly three-fourths of the new cases were diagnosed because of symptoms in the patients themselves. This might to some degree be a

result of the sick benefit club system in Denmark, with free medical advice, since most persons consult their physician for even relatively slight symptoms. At the same time, it must be emphasized that general practitioners take an active part in the control and eradication of tuberculosis and refer their patients to the tuberculosis dispensaries

TABLE 11.—*Percent of newly reported cases of pulmonary tuberculosis, Denmark, 1941–44, by reason for examination*

Reasons newly reported cases were diagnosed for tuberculosis	1941	1942	1943	1944
Total	100	100	100	100
Symptoms	68.7	65.9	70.5	74.0
Examination of milieu	10.7	11.8	10.5	10.3
Group examinations	7.5	9.0	6.7	5.1
Other and unknown	13.1	13.3	12.3	10.6

for examination, even when the symptoms are slight and not characteristic.

It has been realized increasingly that unrecognized cases of pulmonary tuberculosis constitute the most serious sources of infection, and in recent years, therefore, great efforts have been made to diagnose as many cases in this category as possible. This program has been included in the more extensive examinations performed by the tuberculosis dispensaries in recent years, and lately the tuberculosis dispensaries have begun to carry out really universal examinations that cover the entire population of a given district.

In 1941 the State purchased a so-called X-ray car, equipped especially for mass examinations for tuberculosis, and this car is employed among other things to show the practicability and significance of universal examinations of the population. After such examinations performed in 1941–43,[5] in various districts of the country, covering about 50,000 persons, it was ascertained that previously unrecognized infectious pulmonary tuberculosis could be demonstrated in about one in every 500 individuals examined.

BCG VACCINATION

Owing to the epidemiological aspect of tuberculosis in Denmark—with the low percentage of positive tuberculin reactions among the young adults, together with the frequent and dangerous primary infections—BCG vaccination has been employed rather extensively in recent years. As long as tuberculosis among cattle prevailed in Denmark, the tubercle bacilli present in milk effectuated a vaccination against tuberculosis in the inhabitants, even though this was not intended. Now, however, after tuberculosis among cattle has been practically eradicated in great parts of Denmark, vaccination pre-

[5] Holm, Johannes, and Holm, Mogens: National examinations for tuberculosis Acta tuberc. Scandinav., 19–71 (1945).

viously obtained from milk has been replaced by the more rational BCG vaccination.

As mentioned before, every examination for tuberculosis performed in a tuberculosis dispensary implies a tuberculin test, and the general principle is now to advise all tuberculin-negative individuals over 7 to 8 years to submit to BCG vaccination. Not only tuberculin-negatives living in a tuberculous milieu and in other groups particularly exposed to risk of infection are vaccinated, but also tuberculin-negatives in the ordinary population which is not particularly exposed.

After 15 years' employment of BCG vaccination in Denmark, general experience has shown that this form of vaccination is quite safe and accompanied by relatively few complications when it is carried out properly. Indeed, BCG vaccination offers a considerable protection not only against the morbid phenomena that accompany the primary infection, but also against the development of genuine tuberculosis.

In the universal examinations now going on, for instance, in Copenhagen, a city of 1 million inhabitants, where during this year the entire population between 15 and 35 years will be examined, BCG vaccination is recommended to all tuberculin negatives. In recent years systematic vaccination of all school children in the upper classes has been initiated. Generally, BCG vaccination has been appreciated greatly by the population, and only a few percent of the tuberculin-negatives have refused to submit to it.

If the present program against tuberculosis, which now is active in Denmark, is allowed to continue under peaceful conditions, there is every reason to believe that within a relatively few years tuberculosis will become a rare disease in Denmark.

TUBERCULOSIS MORTALITY IN MAJOR CITIES: UNITED STATES, 1944[1]

By Elizabeth H. Pitney, *Social Science Analyst, United States Public Health Service*, and Richard V. Kasius, *Assistant Statistician, United States Public Health Service*

More than one-third of the deaths from tuberculosis in the United States are found among residents of the 92 largest cities. A knowledge of the distribution of these deaths is one of the working tools required for the direction and evaluation of effective control programs. Data on tuberculosis mortality in large cities for past years have been presented by Liveright (*1*), the New York Tuberculosis and Health

[1] From the National Office of Vital Statistics and the Tuberculosis Control Division.

[*] (Note: This paper is, in part, a summary of a longer study with the same title and by the same authors, published as a Vital Statistics-Special Report (*in press*). Detailed data are given on tuberculosis mortality in the 92 large cities, by age, race, and sex, for 1944.)

Association (*2*), the National Tuberculosis Association (*3*), and Kasius and Pitney (*4*). The purpose of this paper is twofold: first, to present data for 1944 on the mortality from tuberculosis among residents of the 92 cities of the United States having a population of 100,000 or more in 1940; and secondly, to present information for these cities on the distribution of deaths from respiratory tuberculosis among the various types of institutions.

Because population estimates necessary for computing death rates are not available, further use is made in this paper of the tuberculosis death ratio, or proportionate mortality. This measure, relating the number of deaths from tuberculosis to the number of deaths from all causes, is an index of the relative importance of tuberculosis as a cause of death. Its interpretation and limitations have been discussed in an earlier paper (*4*).

TUBERCULOSIS MORTALITY BY AGE, RACE, AND SEX

Tuberculosis is found to account for 4.5 percent of all deaths occurring among residents of the 92 major cities of the United States in 1944. For whites and nonwhites, respectively, the tuberculosis death ratios were 3.6 and 11.5 per 100 deaths from all causes.

The variation with age, race, and sex in the mortality from tuberculosis in the large cities is illustrated in table 1, in which tuberculosis death ratios by age, race, and sex are shown for the combined populations of the 92 cities in 1944.

TABLE 1.—*Death ratios per 100 deaths from all causes for tuberculosis (all forms) by sex, age and race, for 92 cities of over 100,000 population: United States, 1944*

[By place of residence]

Race	Total	Male					Female				
		All ages	Under 15	15–44	45–64	65 and over	All ages	Under 15	15–44	45–64	65 and over
All races	4.5	5.3	2.0	16.5	6.1	1.6	3.5	2.8	17.0	2.1	0.6
White [1]	3.6	4.4	1.4	13.5	5.7	1.5	2.5	2.0	13.7	1.9	.6
Nonwhite [2]	11.5	12.5	5.4	26.3	9.7	2.6	10.5	6.7	25.2	3.3	1.1

[1] For cities having small nonwhite populations (less than 20,000 or less than 10 percent of the total population according to the 1940 census) the data for all races are used to approximate those for the white population.

[2] Based on data for only those cities in which the nonwhite population constitutes at least 10 percent of the total population or numbers 20,000 or more according to the 1940 census.

The tuberculosis death ratios for males of all races increase from 2.0 in the age group under 15 years to 16.5 in the age group 15 to 44, and then decline to 6.1 and 1.6 in the age groups 45 to 64 and 65 and over, respectively. The death ratios for females follow the same pattern, modified somewhat by a greater concentration of tuberculosis deaths at the younger ages. In each age group, tuberculosis causes a far larger proportion of the total deaths among nonwhite residents

of the major cities than it does among white. For nonwhites 15 to 44 years of age, tuberculosis assumes such importance that the elimination of this single cause of death would effect a reduction of 25 percent in the total mortality of nonwhite males and females of this age.

A review of the series of tuberculosis death ratios, specific for age, race, and sex for the combined populations of the 92 cities (fig. 1) for the three periods 1939–41, 1942–43, and 1944, leads to the general conclusion that the proportionate mortalities for males, both white and nonwhite, have remained rather stable, while those for females in both race groups have tended to decline. The total death ratio for

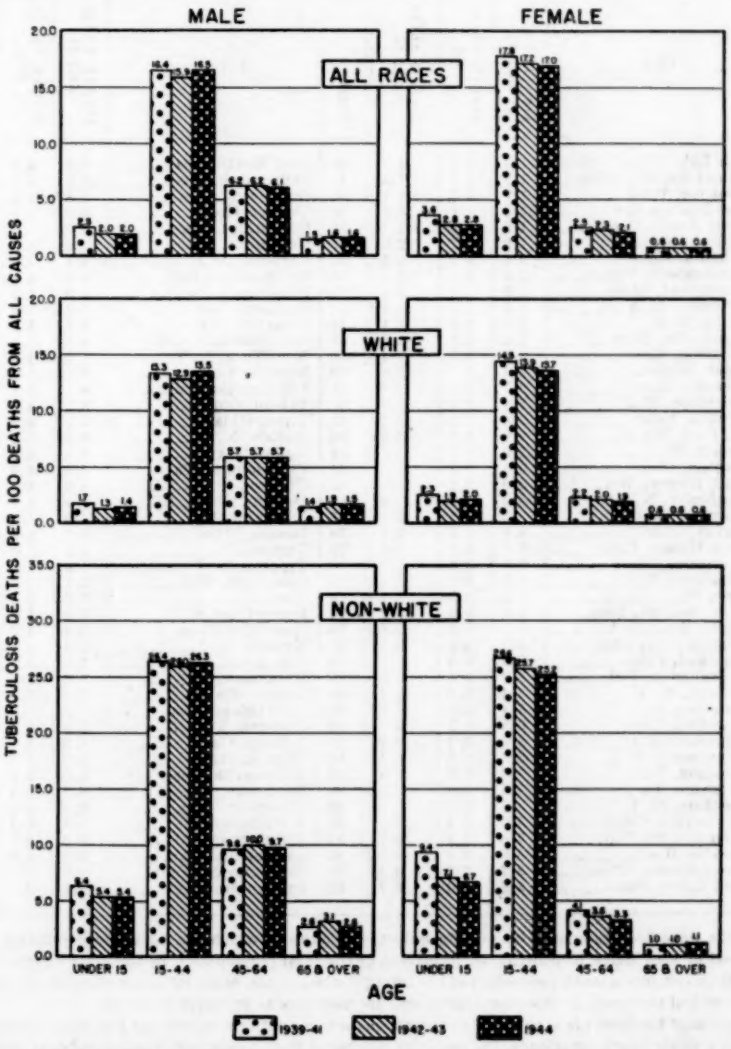

FIGURE 1.—Death ratios for tuberculosis (all forms) by age, race, and sex for 92 cities of over 100,000 population: United States, 1939–41, 1942–43, and 1944.

the 92 cities has declined from 5.0 in 1939–41 to 4.6 in 1942–43 and to 4.5 in 1944.

The tuberculosis death ratios for all races, whites,[2] and nonwhites, in the individual cities in 1944,[3] are given in tables 2 to 4 with the corresponding ratios for 1942–43 and for the 3-year period 1942–44. In each table the cities are listed in the rank order of their death ratios for 1942–44. The widely differing role that tuberculosis plays in the

TABLE 2.—*Death ratios per 100 deaths from all causes for tuberculosis (all forms) for 92 cities of over 100,000 population: United States, 1944, 1942–43, and 1942–44 (all races)*

[Cities are ranked according to the death ratios for 1942–44, by place of residence]

Rank	City	Death ratio 1942–44	Death ratio 1944	Death ratio 1942–43	Rank	City	Death ratio 1942–44	Death ratio 1944	Death ratio 1942–43
1	Salt Lake City, Utah	1.3	1.2	1.4	46	Fort Worth, Tex	3.8	3.2	4.1
2	Grand Rapids, Mich	1.7	1.5	1.8	46	Milwaukee, Wis	3.8	3.9	3.8
2	Spokane, Wash	1.7	1.7	1.7	46	San Diego, Calif	3.8	4.0	3.7
4	Des Moines, Iowa	1.8	2.1	1.7	50	Denver, Colo	3.9	3.9	3.8
4	Long Beach, Calif	1.8	1.9	1.8	51	Cambridge, Mass	4.0	4.1	3.9
6	Duluth, Minn	1.9	1.7	2.0	51	Columbus, Ohio	4.0	3.9	4.0
7	Wichita, Kans	2.1	1.4	2.5	53	Camden, N. J	4.1	4.0	4.2
8	Minneapolis, Minn	2.2	2.5	2.1	53	Indianapolis, Ind	4.1	4.1	4.2
8	Springfield, Mass	2.2	1.5	2.6	55	Pittsburgh, Pa	4.3	4.2	4.3
10	Syracuse, N. Y	2.3	2.1	2.4	55	St. Louis, Mo	4.3	3.9	4.4
10	Utica, N. Y	2.3	2.5	2.1	57	Knoxville, Tenn	4.5	4.2	4.6
12	Somerville, Mass	2.4	2.1	2.6	57	San Francisco, Calif	4.5	4.8	4.4
13	Portland, Oreg	2.5	2.5	2.4	59	New York, N. Y	4.6	4.6	4.6
14	Flint, Mich	2.6	2.1	2.8	59	Norfolk, Va	4.6	3.2	5.2
15	Lowell, Mass	2.7	2.7	2.7	61	Los Angeles, Calif	4.7	4.5	4.7
16	Elizabeth, N. J	2.8	2.9	2.8	61	Toledo, Ohio	4.7	4.4	4.9
16	Omaha, Nebr	2.8	3.4	2.5	61	Tulsa, Okla	4.7	4.9	4.6
16	St. Paul, Minn	2.8	2.6	3.0	64	Buffalo, N. Y	4.8	5.2	4.5
19	Peoria, Ill	2.9	3.7	2.5	64	Dallas, Tex	4.8	4.2	5.1
20	Canton, Ohio	3.0	2.4	3.3	64	Philadelphia, Pa	4.8	4.9	4.7
20	Fort Wayne, Ind	3.0	2.2	3.4	67	Chicago, Ill	4.9	4.8	5.0
20	Rochester, N. Y	3.0	3.4	2.8	67	Dayton, Ohio	4.9	4.7	5.0
20	Tacoma, Wash	3.0	2.9	3.1	67	Louisville, Ky	4.9	5.4	4.6
24	Akron, Ohio	3.1	2.7	3.4	70	Boston, Mass	5.0	4.9	5.0
24	New Haven, Conn	3.1	3.4	2.9	70	Tampa, Fla	5.0	5.0	4.9
24	Worcester, Mass	3.1	3.6	2.9	70	Trenton, N. J	5.0	4.0	5.5
27	Charlotte, N. C	3.2	2.7	3.4	73	Cleveland, Ohio	5.1	4.9	5.2
27	Erie, Pa	3.2	3.3	3.1	74	Gary, Ind	5.2	3.5	6.0
27	New Bedford, Mass	3.2	3.3	3.2	74	Jersey City, N. J	5.2	5.6	5.0
27	South Bend, Ind	3.2	3.8	2.8	76	Nashville, Tenn	5.4	4.7	5.7
31	Kansas City, Kans	3.3	2.9	3.5	76	Newark, N. J	5.4	5.1	5.5
31	Oakland, Calif	3.3	3.0	3.5	78	Cincinnati, Ohio	5.5	5.7	5.3
31	Wilmington, Del	3.3	3.1	3.3	78	Richmond, Va	5.5	5.5	5.6
34	Albany, N. Y	3.4	3.6	3.4	80	Miami, Fla	5.6	5.7	5.6
34	Paterson, N. J	3.4	2.6	3.8	81	New Orleans, La	5.7	5.3	5.9
36	Hartford, Conn	3.5	3.7	3.3	82	Houston, Tex	5.8	5.7	5.9
36	Oklahoma City, Okla	3.5	3.2	3.7	83	Atlanta, Ga	5.9	5.1	6.3
36	Providence, R. I	3.5	3.6	3.4	83	Detroit, Mich	5.9	6.0	5.9
36	Reading, Pa	3.5	3.5	3.4	85	Jacksonville, Fla	6.0	5.4	6.2
36	Scranton, Pa	3.5	3.0	3.8	86	Baltimore, Md	6.3	6.3	6.3
36	Yonkers, N. Y	3.5	2.6	4.0	86	Memphis, Tenn	6.3	5.9	6.5
42	Bridgeport, Conn	3.6	3.9	3.4	88	Washington, D. C	6.4	6.7	6.3
42	Kansas City, Mo	3.6	3.4	3.7	89	Birmingham, Ala	6.5	6.7	6.4
42	Seattle, Wash	3.6	3.8	3.5	90	Sacramento, Calif	6.8	6.2	7.2
45	Youngstown, Ohio	3.7	2.2	4.5	91	Chattanooga, Tenn	8.0	7.1	8.4
46	Fall River, Mass	3.8	4.0	3.7	92	San Antonio, Tex	9.5	8.7	9.9

[2] Deaths have been tabulated by race for only the 40 cities in which the nonwhite population in 1940 numbered at least 20,000 or constituted 10 percent of the total population. In the other 52 cities, where nonwhites constitute a small proportion of the total population, the death ratios for all races are the same, for all practical purposes, as those for whites, and are used here to approximate them.

[3] No attempt has been made to rank the cities in accordance with their ratios for 1944 for the reason that, based on a single year's experience, the ratios are computed from a relatively small number of deaths. A chance variation alone could account for apparently large changes in rank order. The number of tuberculosis deaths on which the ratios for 1944 are based are given in table 8.

TABLE 3.—*Death ratios per 100 deaths from all causes for tuberculosis (all forms) for 92 cities of over 100,000 population: United States, 1944 and 1942–44 (white)* [1]

[Cities are ranked according to the death ratios for 1942–44 by place of residence]

Rank	City	Death ratio 1942–44	Death ratio 1944	Death ratio 1942–43	Rank	City	Death ratio 1942–44	Death ratio 1944	Death ratio 1942–43
1	Salt Lake City, Utah	1.3	1.2	1.4	46	Gary, Ind	3.4	2.4	3.9
2	Grand Rapids, Mich	1.7	1.5	1.8	46	Paterson, N. J	3.4	2.6	3.8
2	Spokane, Wash	1.7	1.7	1.7	46	Washington, D. C	3.4	3.8	3.2
4	Des Moines, Iowa	1.8	2.1	1.7	50	Hartford, Conn	3.5	3.7	3.3
4	Long Beach, Calif	1.8	1.9	1.8	51	Newark, N. J	3.5	3.0	3.7
6	Duluth, Minn	1.9	1.7	2.0	51	Oklahoma City, Okla	3.5	3.2	3.7
7	Norfolk, Va	2.0	1.7	2.2	51	Providence, R. I	3.5	3.6	3.4
8	Wichita, Kans	2.1	1.4	2.5	51	Reading, Pa	3.5	3.5	3.4
9	Charlotte, N. C	2.2	1.8	2.4	51	Richmond, Va	3.5	2.7	3.9
9	Minneapolis, Minn	2.2	2.5	2.1	51	Scranton, Pa	3.5	3.0	3.8
9	Springfield, Mass	2.2	1.5	2.6	51	Yonkers, Ohio	3.5	2.6	4.0
12	Syracuse, N. Y	2.3	2.1	2.4	58	Bridgeport, Conn	3.6	3.9	3.4
12	Utica, N. Y	2.3	2.5	2.1	58	Cincinnati, Ohio	3.6	3.9	3.5
12	Wilmington, Del	2.3	2.6	2.2	58	Fort Worth, Tex	3.6	2.9	3.9
15	Somerville, Mass	2.4	2.1	2.6	58	New York, N. Y	3.6	3.6	3.7
16	Portland, Oreg	2.5	2.5	2.4	58	Seattle, Wash	3.6	3.8	3.5
17	Flint, Mich	2.6	2.1	2.8	63	Cleveland, Ohio	3.7	3.5	3.9
18	Kansas City, Mo	2.7	2.7	2.7	63	Knoxville, Tenn	3.7	3.9	3.7
18	Lowell, Mass	2.7	2.7	2.7	63	Louisville, Ky	3.7	3.9	3.5
20	Elizabeth, N. J	2.8	2.9	2.8	63	Memphis, Tenn	3.7	4.0	3.5
20	Jacksonville, Fla	2.8	2.7	2.9	63	Chicago, Ill	3.7	3.6	3.8
20	Omaha, Nebr	2.8	3.4	2.5	63	Youngstown, Ohio	3.7	2.2	4.5
20	St. Paul, Minn	2.8	2.6	3.0	69	Fall River, Mass	3.8	4.0	3.7
24	Peoria, Ill	2.9	3.7	2.5	69	Milwaukee, Wis	3.8	3.9	3.8
25	Canton, Ohio	3.0	2.4	3.3	69	San Diego, Calif	3.8	4.0	3.7
25	Columbus, Ohio	3.0	2.9	3.0	72	Dallas, Tex	3.9	3.6	4.1
25	Fort Wayne, Ind	3.0	2.2	3.4	72	Dayton, Ohio	3.9	3.9	3.9
25	Indianapolis, Ind	3.0	3.2	2.9	72	Denver, Colo	3.9	3.9	3.8
25	Kansas City, Kans	3.0	2.7	3.2	72	Nashville, Tenn	3.9	3.9	3.9
25	Rochester, N. Y	3.0	3.4	2.8	72	Tampa, Fla	3.9	4.1	3.7
25	Tacoma, Wash	3.0	2.9	3.1	77	Baltimore, Md	4.0	4.0	4.0
32	Akron, Ohio	3.1	2.7	3.4	77	Cambridge, Mass	4.0	4.1	3.9
32	New Haven, Conn	3.1	3.4	2.9	77	San Francisco, Calif	4.0	4.2	3.9
32	Pittsburgh, Pa	3.1	3.3	3.1	77	Tulsa, Okla	4.0	4.3	3.8
32	Worcester, Mass	3.1	3.6	2.9	81	New Orleans, La	4.1	3.7	4.2
36	Atlanta, Ga	3.2	2.5	3.6	82	Los Angeles, Calif	4.2	4.0	4.2
36	Camden, N. J	3.2	3.1	3.2	83	Detroit, Mich	4.3	4.5	4.3
36	Erie, Pa	3.2	3.3	3.1	84	Boston, Mass	4.6	4.5	4.6
36	Miami, Fla	3.2	3.1	3.3	85	Toledo, Ohio	4.7	4.4	4.9
36	New Bedford, Mass	3.2	3.3	3.2	86	Buffalo, N. Y	4.8	5.2	4.5
36	South Bend, Ind	3.2	3.8	2.8	87	Houston, Tex	5.0	5.2	4.9
36	St. Louis, Mo	3.2	2.9	3.3	87	Trenton, N. J	5.0	4.0	5.5
43	Birmingham, Ala	3.3	4.2	2.8	89	Jersey City, N. J	5.2	5.6	5.0
43	Oakland, Calif	3.3	3.0	3.5	90	Chattanooga, Tenn	5.7	6.2	5.5
43	Philadelphia, Pa	3.3	3.3	3.3	91	Sacramento, Calif	6.8	6.2	7.2
46	Albany, N. Y	3.4	3.6	3.4	92	San Antonio, Tex	9.5	8.7	9.9

[1] For cities having a small nonwhite population (less than 20,000 or less than 10 percent of the total population according to the 1940 census) the death ratios for all races are used to approximate those for the white population.

total mortality of the various cities is evident from the distribution of their death ratios. The tuberculosis death ratios for all races in the 92 cities, in 1942–44, range from 1.3 in Salt Lake City to 9.5 in San Antonio, with a median value of 3.8. In 6 cities the ratios for all races were less than 2.0, and in 7 they exceeded 6.0. The ratios for whites in 6 cities were under 2.0, and in only 2 were ratios of more than 6.0 reported. In 80 of the 92 cities, the proportionate mortality for whites fell between 2.0 and 4.9. The median value of the ratios for whites was 3.4. In marked contrast is the ranking of the death ratios for nonwhites in the 40 cities for which data classified by race are available. This extends from 4.3 in Kansas City, Kans., to 16.7

TABLE 4.—*Death ratios per 100 deaths from all causes for tuberculosis (all forms) for 40 cities [1] of over 100,000 population: United States, 1944, 1942–43 and 1942–44 (nonwhite)*

[Cities are ranked according to the death ratios for 1942–44 by place of residence]

Rank	City	Death ratio 1942–44	Death ratio 1944	Death ratio 1942–43
1	Kansas City, Kans	4.3	3.9	4.5
2	Charlotte, N. C	4.4	4.0	4.6
3	Fort Worth, Tex	4.9	4.8	4.9
4	Knoxville, Tenn	7.2	5.3	8.3
5	Wilmington, Del	7.4	5.9	8.1
6	Tampa, Fla	7.6	7.3	7.7
7	Dallas, Tex	7.7	6.2	8.4
8	Nashville, Tenn	7.9	6.2	8.6
9	Houston, Tex	8.0	7.1	8.5
9	Norfolk, Va	8.0	5.3	9.2
11	Kansas City, Mo	8.5	7.6	8.9
12	New Orleans, La	8.8	8.4	9.0
12	Tulsa, Okla	8.8	8.4	9.0
14	Richmond, Va	9.0	10.6	8.2
15	Atlanta, Ga	9.1	8.2	9.4
15	Memphis, Tenn	9.1	8.0	9.6
17	Louisville, Ky	9.2	10.7	8.5
17	St. Louis, Mo	9.2	8.5	9.5
19	Birmingham, Ala	9.6	9.4	9.7
19	Camden, N. J	9.6	9.0	9.9
21	Gary, Ind	9.7	6.5	11.2
21	Jacksonville, Fla	9.7	8.9	10.1
23	Indianapolis, Ind	9.9	9.3	10.2
24	Columbus, Ohio	10.0	10.2	9.9
25	Chattanooga, Tenn	11.2	8.6	12.3
26	Washington, D. C	11.6	11.8	11.6
27	Pittsburgh, Pa	11.8	10.7	12.4
28	Dayton, Ohio	12.3	11.2	12.8
29	Los Angeles, Calif	12.6	12.5	12.6
30	Philadelphia, Pa	12.8	13.1	12.6
31	Baltimore, Md	13.0	13.3	12.9
32	Boston, Mass	13.6	12.8	14.0
32	Miami, Fla	13.6	15.0	12.9
34	Chicago, Ill	13.8	13.2	14.1
35	Cleveland, Ohio	14.6	14.4	14.6
36	Cincinnati, Ohio	15.6	15.9	15.4
37	San Francisco, Calif	15.8	17.2	15.0
38	New York, N. Y	15.9	15.7	16.0
39	Detroit, Mich	16.1	15.5	16.4
40	Newark, N. J	16.7	17.7	16.2

[1] Cities shown in this table are those in which the nonwhite population constitutes at least 10 percent of the total population or numbers 20,000 or more according to the 1940 census.

in Newark, only at its lower end overlapping the array for whites. In only 3 cities are the ratios less than 6.0, and ratios greater than 15.0 are reported in 5 cities. The median value was 9.6.

For most cities the death ratios for the two periods 1942–43 and 1944, which make up the 3-year period 1942–44, are much the same; in some cities, however, the differences between the ratios are relatively large. In order to evaluate the differences, they were tested for statistical significance.[4] The only increases in the ratios for 1944 over those for 1942–43 that were indicated as statistically significant were those for all races in Buffalo, Louisville, and Omaha, for whites [5] in Birmingham and Washington, and for nonwhites in Richmond. Significant decreases were found in the ratios for all races in 13 cities—Atlanta, Dallas, Fort Wayne, Gary, Norfolk, Paterson, San Antonio, Springfield (Massachusetts), St. Louis, Trenton, Wichita, Yonkers,

[4] A difference equal to or greater than twice the standard error of the difference was considered statistically significant.

and Youngstown; for whites [5] in 5 cities—Atlanta, Gary, Newark, Richmond, and St. Louis; and for nonwhites in 4 cities—Chattanooga, Gary, Nashville, and Norfolk.

A review of the death ratios for each city for 1939–41, 1942–43, and 1944 discloses that the ratios in some cities have been rising steadily over the three periods. These cities are as follows: for all races—Buffalo, Cambridge, Cincinnati, Louisville, Peoria, and Worcester; for whites [5]—Cincinnati, Louisville, and Tampa; and for nonwhites—Louisville.

DEATHS FROM RESPIRATORY TUBERCULOSIS OCCURRING IN INSTITUTIONS

Isolation of the infectious cases of tuberculosis, always a major part of a control program, is of the greatest importance in the large cities, where because of the crowded, fluid conditions of urban living, the contacts of an infectious case are likely to be more numerous than in small communities. A partial indication of the extent of such isolation may be gained from the statistics giving the number of deaths from respiratory tuberculosis among the residents of the large cities by type of institution in which the deaths occurred. However, since length of stay in an institution, which is directly related to the effectiveness of hospitalization, is not known, conclusions based only on mortality statistics should be cautiously drawn.

Of the 18,275 deaths from respiratory tuberculosis that occurred among residents of the large cities in 1944, 4,017, or 22.0 percent, were in the home, while 14,258, or 78.0 percent, were in institutions (table 5). In the country as a whole, only 64.0 percent of such deaths were in institutions, while 36.0 percent were in homes. Tuberculosis deaths in general hospitals accounted for 41.6 percent of the total in

TABLE 5.—*Number and percent of deaths from respiratory tuberculosis, in institutions by type of service and type of control: United States and 92 cities of over 100,000 population, 1944*

[By place of residence]

Type of service and type of control	United States		92 cities	
	Number	Percent	Number	Percent
Total	50,712	100.0	18,275	100.0
Deaths not in institution	18,241	36.0	4,017	22.0
Deaths in institution	32,471	64.0	14,258	78.0
Type of service:				
General hospital	12,607	24.9	7,601	41.6
Tuberculosis hospital	14,496	28.6	5,879	32.2
Nervous and mental institutions	4,056	8.0	284	1.6
Other institutions	1,312	2.6	494	2.7
Type of control:				
Federal	3,428	6.8	1,243	6.8
State	7,968	15.7	965	5.3
County and city	15,158	29.9	9,528	52.1
Nonprofit	4,805	9.5	2,252	12.3
Proprietary and unknown	1,112	2.2	270	1.5

[5] Only the cities are listed for which deaths of whites and nonwhites were tabulated separately.

the cities, while 5,879, or 32.2 percent, occurred in tuberculosis sanatoria. The national picture was the reverse of this, since a higher percentage of respiratory tuberculosis deaths (28.6 percent) occurred in tuberculosis institutions than in general hospitals (24.9). Only 1.6 percent of the deaths among city residents were in nervous and mental institutions, contrasted with 8.0 percent nationally.

TABLE 6.—*Percent of deaths from respiratory tuberculosis in institutions by type of service, by race and sex, for 92 cities of over 100,000 population and United States: 1944*

[By place of residence]

Race and sex	92 Cities					United States				
	Not in institution	In general hospital	In tuberculosis hospital	In nervous and mental institution	In other institution	Not in institution	In general hospital	In tuberculosis hospital	In nervous and mental institution	In other institution
All races, both sexes	22.0	41.6	32.2	1.6	2.7	36.0	24.8	28.6	8.0	2.6
Male	19.0	44.7	32.2	1.4	2.7	31.3	28.5	29.6	7.7	2.9
Female	27.9	35.5	32.1	1.8	2.6	43.4	19.0	26.9	8.6	2.1
White [1] male	19.8	42.6	33.0	1.7	2.9	31.4	27.3	29.8	8.5	2.9
White [1] female	31.0	30.6	33.0	2.2	3.2	44.0	17.2	26.5	9.9	2.3
Nonwhite [2] male	16.4	51.0	29.7	.6	2.3	31.2	32.2	29.0	4.8	2.8
Nonwhite [2] female	22.6	44.2	30.6	1.0	1.6	42.4	22.7	27.8	5.6	1.5

[1] For cities having small nonwhite population (less than 20,000 or less than 10 percent of the total population according to the 1940 census) the data for all races are used to approximate those for the white population.

[2] Based on data for only those cities in which the nonwhite population constitutes at least 10 percent of the total population or numbers 20,000 or more according to the 1940 census.

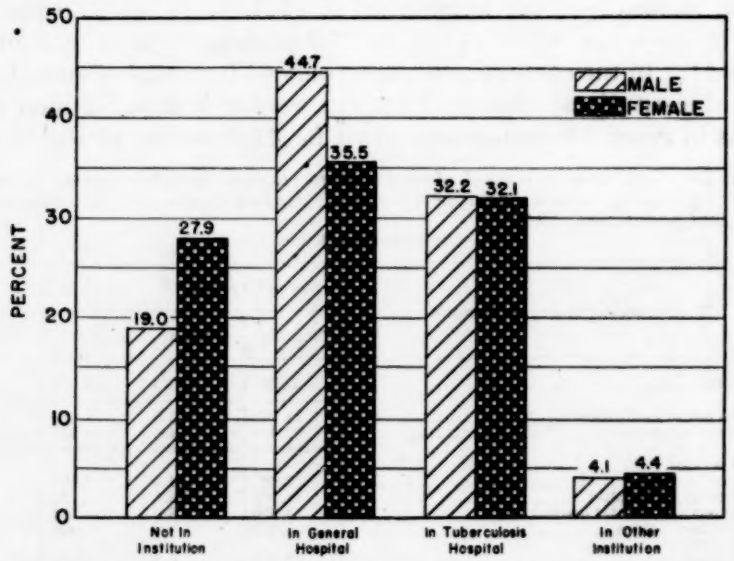

FIGURE 2.—Percentage of deaths from respiratory tuberculosis among males and females by type of institution, for residents of 92 cities of over 100,000 population: United States, 1944.

The distribution of the respiratory tuberculosis deaths in the 92 cities by type of institutional control also diverges from the national pattern. More than half (52.1 percent) of all such deaths among residents of the large cities occurred in city and county institutions—ten times as many as in State hospitals (5.3 percent). On the other hand, only 29.9 percent of the national total were in hospitals under control of city or county, and half as many (15.7 percent) occurred in institutions operated by States. A slightly larger percent (12.3) of the deaths among the city residents were in nonprofit institutions than was true for the entire country (9.5).

The small proportion of deaths of city residents in State institutions may be partially explained by the rule that deaths of patients resident there for over a year are allocated to the place in which the institution is located. Hence, the death in a State hospital of a city's resident affected by this rule would not be included in the mortality tabulation for that city, unless the institution was situated within the city limits. It may also be true, however, that the larger, and generally wealthier cities are better able to provide their own hospitals than are the smaller communities, and therefore would be less dependent upon State institutions.

TABLE 7.—*Percent of deaths from respiratory tuberculosis occurring in institutions, by type of service and number of deaths from respiratory tuberculosis; 92 cities of over 100,000 population: United States, 1944*

[By place of residence]

City	Percent of deaths in—				Number of deaths
	Institutions	General hospitals	Tuberculosis hospitals	Other institutions	
Akron, Ohio	56.9	3.4	41.4	12.1	58
Albany, N. Y	78.9	66.7	8.8	3.5	57
Atlanta, Ga	33.3	10.9	21.8	0.6	156
Baltimore, Md	75.8	45.1	28.8	1.8	649
Birmingham, Ala	29.6	13.8	15.8	0	196
Boston, Mass	89.7	35.4	51.1	3.3	466
Bridgeport, Conn	80.3	24.6	55.7	0	61
Buffalo, N. Y	79.8	67.7	10.2	1.9	322
Cambridge, Mass	86.8	24.5	58.5	3.8	53
Camden, N. J	74.1	14.8	57.4	1.9	54
Canton, Ohio	36.0	24.0	12.0	0	25
Charlotte, N. C	60.0	4.0	52.0	4.0	25
Chattanooga, Tenn	59.6	10.1	46.5	3.0	99
Chicago, Ill	83.0	48.5	33.4	1.2	1,661
Cincinnati, Ohio	81.8	29.2	46.2	6.4	325
Cleveland, Ohio	80.9	73.9	3.3	3.7	460
Columbus, Ohio	72.4	9.7	44.1	18.6	145
Dallas, Tex	51.8	23.2	28.6	0	112
Dayton, Ohio	63.6	40.7	11.9	11.0	118
Denver, Colo	67.3	51.0	15.0	1.4	147
Des Moines, Iowa	78.1	78.1	0	0	32
Detroit, Mich	88.1	40.3	46.4	1.4	765
Duluth, Minn	94.4	27.8	66.7	0	18
Elizabeth, N. J	93.3	16.7	76.7	0	30

TABLE 7.—*Percent of deaths from respiratory tuberculosis occurring in institutions by type of service and number of deaths from respiratory tuberculosis; 92 cities of over 100,000 population: United States, 1944*—Continued

[By place of residence]

City	Percent of deaths in—				Number of deaths
	Institutions	General hospitals	Tuberculosis hospitals	Other institutions	
Erie, Pa	50.0	16.7	33.3	0	42
Fall River, Mass	66.7	11.1	54.0	1.6	63
Flint, Mich	78.3	26.1	52.2	0	23
Fort Wayne, Ind	67.9	21.4	28.6	17.9	28
Fort Worth, Tex	54.7	29.7	25.0	0	64
Gary, Ind	50.0	26.5	23.5	0	34
Grand Rapids, Mich	63.6	22.7	40.9	0	22
Hartford, Conn	85.5	37.1	46.8	1.6	62
Houston, Tex	56.1	29.7	25.2	1.2	246
Indianapolis, Ind	61.8	47.2	7.0	7.5	199
Jacksonville, Fla	71.4	26.2	42.9	2.4	126
Jersey City, N. J	83.4	23.4	60.0	0	175
Kansas City, Kans	56.8	48.6	8.1	0	37
Kansas City, Mo	83.1	45.6	35.0	2.5	160
Knoxville, Tenn	45.8	27.1	18.8	0	48
Long Beach, Calif	67.5	52.5	12.5	2.5	40
Los Angeles, Calif	82.2	60.0	20.1	2.1	824
Louisville, Ky	75.5	23.1	52.4	0	208
Lowell, Mass	78.8	12.1	6.1	60.6	33
Memphis, Tenn	64.2	23.7	40.5	0	173
Miami, Fla	85.0	82.2	.9	1.9	107
Milwaukee, Wis	83.0	24.3	57.9	.9	235
Minneapolis, Minn	86.0	37.4	48.6	0	107
Nashville, Tenn	41.9	12.9	23.7	5.4	93
Newark, N. J	86.0	45.5	39.6	.9	235
New Bedford, Mass	75.7	16.2	59.5	0	37
New Haven, Conn	81.0	33.3	47.6	0	63
New Orleans, La	62.1	60.2	1.8	0	327
New York, N. Y	85.8	42.0	39.5	4.2	3,306
Norfolk, Va	57.6	35.6	22.0	0	59
Oakland, Calif	81.9	41.9	39.0	1.0	105
Oklahoma City, Okla	71.4*	10.7	44.6	16.1	56
Omaha, Nebr	78.5	72.2	6.3	0	79
Paterson, N. J	73.5	17.6	52.9	2.9	34
Peoria, Ill	78.4	13.5	62.2	2.7	37
Philadelphia, Pa	82.0	64.9	9.2	7.9	1,104
Pittsburgh, Pa	68.8	16.3	50.0	2.5	320
Portland, Oreg	72.3	21.3	50.0	1.1	94
Providence, R. I	86.4	18.4	28.2	39.8	103
Reading, Pa	61.9	16.7	45.2	0	42
Richmond, Va	79.4	16.7	61.1	1.6	126
Rochester, N. Y	88.6	29.8	45.6	13.2	114
Sacramento, Calif	92.9	35.4	55.6	2.0	99
St. Louis, Mo	83.2	48.8	12.2	22.2	369
St. Paul, Minn	90.0	84.3	5.7	0	70
Salt Lake City, Utah	86.7	66.7	20.0	0	15
San Antonio, Tex	29.0	13.7	14.7	0.7	300
San Diego, Calif	84.0	27.0	56.0	1.0	100
San Francisco, Calif	83.1	56.1	23.7	3.3	396
Scranton, Pa	61.4	20.5	40.9	0	44
Seattle, Wash	83.5	51.7	29.5	2.3	176
Somerville, Mass	68.2	22.7	45.5	0	22
South Bend, Ind	51.5	12.1	39.4	0	33
Spokane, Wash	87.5	29.2	50.0	8.3	24
Springfield, Mass	91.3	30.4	13.0	47.8	23
Syracuse, N. Y	76.6	31.9	44.7	0	47
Tacoma, Wash	84.1	22.7	61.4	0	44
Tampa, Fla	68.8	14.1	53.1	1.6	64
Toledo, Ohio	78.3	8.3	47.8	22.3	157
Trenton, N. J	76.6	7.8	48.4	20.3	64
Tulsa, Okla	44.8	20.9	19.4	4.5	67
Utica, N. Y	73.5	8.8	23.5	41.1	34
Washington, D. C	89.8	58.0	26.6	5.1	488
Wichita, Kans	70.6	35.3	35.3	0	17
Wilmington, Del	65.9	14.6	48.8	2.4	41
Worcester, Mass	93.0	7.0	60.5	25.6	86
Yonkers, N. Y	73.5	26.5	47.1	0	34
Youngstown, Ohio	75.7	18.9	56.8	0	37

Analysis by race and sex of the institutional distribution of deaths from respiratory tuberculosis in the United States in 1944 [6] has shown an interesting difference between the proportion of deaths in each sex group occurring in institutions. Among males, 31.3 percent of the deaths occurred in the home, while among females, this proportion was 43.4 percent. A similar distribution is found in the large cities. Here, 19.0 percent of the deaths among males were in the home, contrasted with 27.9 percent of those among females. This difference was also found for both races. Nationally, this sex differential in the proportion of respiratory tuberculosis deaths in the home was

TABLE 8.—*Number of deaths from tuberculosis (all forms) by race, for 92 cities of over 100,000 population: United States, 1944*

[By place of residence]

City	All races	White [1]	Nonwhite [2]	City	All races	White [1]	Nonwhite [2]
Akron, Ohio	64	64	-------	Minneapolis, Minn	120	120	-------
Albany, N. Y	65	65	-------	Nashville, Tenn	99	52	47
Atlanta, Ga	177	47	130	Newark, N. J	253	128	125
Baltimore, Md	710	332	378	New Bedford, Mass	40	40	-------
Birmingham, Ala	217	68	149	New Haven, Conn	67	67	-------
Boston, Mass	491	430	61	New Orleans, La	341	152	189
Bridgeport, Conn	63	63	-------	New York, N. Y	3,561	2,555	1,006
Buffalo, N. Y	347	347	-------	Norfolk, Va	64	20	44
Cambridge, Mass	58	58	-------	Oakland, Calif	126	126	-------
Camden, N. J	56	37	19	Oklahoma City, Okla	61	61	-------
Canton, Ohio	27	27	-------	Omaha, Nebr	84	84	-------
Charlotte, N. C	26	10	16	Paterson, N. J	40	40	-------
Chattanooga, Tenn	105	58	47	Peoria, Ill	42	42	-------
Chicago, Ill	1,798	1,173	625	Philadelphia, Pa	1,187	657	530
Cincinnati, Ohio	361	207	154	Pittsburgh, Pa	346	235	111
Cleveland, Ohio	497	306	191	Portland, Oreg	108	108	-------
Columbus, Ohio	161	101	60	Providence, R. I	108	108	-------
Dallas, Tex	125	82	43	Reading, Pa	45	45	-------
Dayton, Ohio	132	98	34	Richmond, Va	140	44	96
Denver, Colo	159	159	-------	Rochester, N. Y	123	123	-------
Des Moines, Iowa	34	34	-------	Sacramento, Calif	106	106	-------
Detroit, Mich	859	556	303	St. Louis, Mo	403	241	162
Duluth, Minn	20	20	-------	St. Paul, Minn	76	76	-------
Elizabeth, N. J	33	33	-------	Salt Lake City, Utah	18	18	-------
Erie, Pa	43	43	-------	San Antonio, Tex	325	325	-------
Fall River, Mass	64	64	-------	San Diego, Calif	112	112	-------
Flint, Mich	27	27	-------	San Francisco, Calif	439	362	77
Fort Wayne, Ind	30	30	-------	Scranton, Pa	47	47	-------
Fort Worth, Tex	65	48	17	Seattle, Wash	203	203	-------
Gary, Ind	39	19	20	Somerville, Mass	23	23	-------
Grand Rapids, Mich	26	26	-------	South Bend, Ind	37	37	-------
Hartford, Conn	67	67	-------	Spokane, Wash	28	28	-------
Houston, Tex	262	171	91	Springfield, Mass	24	24	-------
Indianapolis, Ind	218	142	76	Syracuse, N. Y	51	51	-------
Jacksonville, Fla	128	35	93	Tacoma, Wash	49	49	-------
Jersey City, N. J	189	189	-------	Tampa, Fla	68	40	28
Kansas City, Kans	39	28	11	Toledo, Ohio	169	169	-------
Kansas City, Mo	177	122	55	Trenton, N. J	68	68	-------
Knoxville, Tenn	52	37	15	Tulsa, Okla	71	54	17
Long Beach, Calif	44	44	-------	Utica, N. Y	36	36	-------
Los Angeles, Calif	904	749	155	Washington, D. C	547	198	349
Louisville, Ky	239	135	104	Wichita, Kans	19	19	-------
Lowell, Mass	34	34	-------	Wilmington, Del	46	31	15
Memphis, Tenn	197	68	129	Worcester, Mass	88	88	-------
Miami, Fla	115	50	65	Yonkers, N. Y	36	36	-------
Milwaukee, Wis	247	247	-------	Youngstown, Ohio	38	38	-------

[1] Includes deaths of nonwhites for those cities having a small nonwhite population.
[2] Deaths are shown only for those cities in which the nonwhite population constituted at least 10 percent of the total or numbered 20,000 or more according to the 1940 census.

[6] Yerushalmy, J., and Moriyama, I. M.: Tuberculosis mortality in the United States and in each State 1944. PUB. HEALTH REP., 61: 487-516 (1946).

attributable to the relatively greater utilization of general hospitals by males than by females, and this also seems to be the condition in the large cities. Of the deaths from respiratory tuberculosis among females, only 35.5 percent occurred in general hospitals, while 44.7 percent of the deaths among males were in such institutions. The distribution of deaths through the other types of institutions was almost identical for both sexes.

In table 7, there is presented for each city the percent of deaths from respiratory tuberculosis in institutions of all types, in general hospitals, and in tuberculosis hospitals. Since the percentages, based in many cases on a small number of deaths, are liable to considerable chance variation, their use will be rather limited until data for several years are available.

In six cities, over 90 percent of the deaths from respiratory tuberculosis occurred in institutions, and at the other extreme, less than half such deaths in seven cities were in institutions. The median percent was 75.4.

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PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES

August 11–September 7, 1946

The accompanying table (table 1) summarizes the prevalence of nine important communicable diseases, based on weekly telegraphic reports from State health departments. The reports from each State for each week are published in the PUBLIC HEALTH REPORTS under the section "Prevalence of disease." The table gives the number of cases of these diseases for the 4 weeks ended September 7, 1946, the number reported for the corresponding period in 1945, and the median number for the years 1941–45.

TABLE 1.—*Number of reported cases of 9 communicable diseases in the United States during the 4-week period August 11–September 7, 1946, the number for the corresponding period in 1945, and the median number of cases reported for the corresponding period, 1941–45*

Division	Current period	1945	5-year median	Current period	1945	5-year median	Current period	1945	5-year median
	Diphtheria			Influenza [1]			Measles [2]		
United States	844	1,221	957	2,256	3,070	2,233	3,058	2,422	2,605
New England	41	11	12	3	54	11	498	212	343
Middle Atlantic	85	74	56	32	12	14	719	245	381
East North Central	109	81	95	32	66	84	655	612	612
West North Central	88	101	80	20	23	34	101	84	184
South Atlantic	174	373	300	817	945	816	275	73	329
East South Central	96	222	158	175	94	70	50	40	83
West South Central	101	237	154	1,038	1,730	1,180	221	173	173
Mountain	41	38	40	118	105	159	262	296	217
Pacific	109	84	73	21	41	71	277	687	607
	Meningococcus meningitis			Poliomyelitis			Scarlet fever		
United States	218	299	299	7,129	3,436	3,436	2,163	3,356	2,746
New England	10	12	16	166	222	222	156	242	242
Middle Atlantic	37	65	65	494	1,107	616	408	539	423
East North Central	43	73	73	1,835	709	709	510	757	652
West North Central	21	17	17	2,340	267	267	158	305	283
South Atlantic	41	33	42	225	313	313	279	527	449
East South Central	19	29	29	257	153	153	143	229	217
West South Central	18	29	27	410	277	58	122	220	113
Mountain	6	10	10	526	166	55	127	98	98
Pacific	23	31	31	876	222	137	260	439	301
	Smallpox			Typhoid and paratyphoid fever			Whooping cough [2]		
United States	4	10	11	507	671	759	7,686	8,711	11,056
New England	0	0	0	50	60	35	712	712	712
Middle Atlantic	0	0	0	102	93	97	1,525	2,494	2,228
East North Central	3	5	5	68	52	93	2,832	1,865	3,260
West North Central	0	3	3	21	33	55	325	334	543
South Atlantic	0	1	1	59	130	150	958	1,173	1,189
East South Central	0	1	2	46	116	129	190	281	407
West South Central	0	0	1	88	114	168	610	725	692
Mountain	1	0	0	31	43	40	206	361	475
Pacific	0	0	1	42	30	30	328	766	766

[1] Mississippi and New York excluded; New York City included.
[2] Mississippi excluded.

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DISEASES ABOVE MEDIAN PREVALENCE

Poliomyelitis.—The number of cases of poliomyelitis rose from 4,453 during the 4 weeks ended August 10 to 7,129 during the 4 weeks ended September 7. It is possible, however, that the peak of the current epidemic was reached during the week ended August 17, the first week of this 4-week period when 1,819 cases were reported. The cases dropped slightly during each of the three succeeding weeks. The number of cases for the 4-week period was more than 2 times that reported for the corresponding period in 1945, which figure (3,436 cases) also represented the 1941–45 median. For the country as a whole the current incidence was the highest recorded for this period in the 18 years for which these weekly data are available. Sixteen States reported more than 80 percent of the total poliomyelitis cases, viz, Minnesota 1,036, Illinois 787, California 711, Wisconsin 457, Missouri 383, New York 353, Colorado 309, Michigan 288, Kansas 231, North Dakota 228, Ohio 191, South Dakota 167, Nebraska 156, Iowa 137, Texas 126, and Washington 114 cases. The New England and Middle Atlantic sections have shown only the normal seasonal increase and the incidence was below the preceding 5-year median in each of these sections. In the South Atlantic region where the current epidemic first made its appearance, the number of cases dropped below the median incidence for this period, but in all other sections the incidence was relatively high, the increases ranging from 1.7 times the median in the East South Central to 9.6 times the median in the Mountain section.

Table 2 shows the total reported cases in geographic sections since the beginning of the year and the incidence by weeks since the first of July, with corresponding data for the three preceding years. Reports indicate that in the South Atlantic, South Central and Mountain sections where the disease first made its appearance in epidemic form about the first of June, the highest weekly incidence was not reached until the middle of August or later, while in the North Central section where the increase did not occur until several weeks later, the peak was reached during the week ended August 10. In the East North Central and Pacific sections the largest numbers of cases were not reported until the week ended August 31. While there was an increase in some sections during the week ended September 7 over the preceding week, the peak seems to have been passed; in most preceding years the highest incidence has been reported during this 4-week period ending early in September.

Influenza.—The incidence of influenza was about normal for this season of the year, the number of cases (2,256) being only slightly above the 1941–45 median, The current incidence was less than 75 percent of the number of cases reported for this period in 1945 when

the disease was unusually prevalent in the State of Texas. The Middle Atlantic and East South Central sections reported a few more cases than might normally be expected, but in all other sections the incidence was lower than the median expectancy.

TABLE 2.—*Number of cases of poliomyelitis reported in each geographic area during 1946, 1945, 1944, and 1943* [1]

Geographic area	Total Jan. 1–Sept. 7	Week ended—									
		July				Aug.					Sept.
		6	13	20	27	3	10	17	24	31	7
All regions:											
1946	14,168	309	428	670	913	1,286	1,584	1,819	1,808	1,781	1,721
1945	7,043	154	254	369	391	474	701	694	931	917	891
1944	10,978	290	462	568	738	932	1,015	1,260	1,529	1,680	1,498
1943	6,792	245	297	329	361	450	545	747	872	956	906
New England:											
1946	290	4	8	20	18	25	23	47	41	37	41
1945	427	11	8	26	34	32	53	38	62	63	59
1944	397	4	8	9	12	36	37	54	74	75	64
1943	384	1	6	3	11	32	36	62	62	77	63
Middle Atlantic:											
1946	939	14	22	40	46	66	100	95	139	124	136
1945	2,091	31	56	95	120	196	227	232	344	295	236
1944	4,687	62	125	216	304	413	449	601	756	895	761
1943	425	6	14	12	13	20	38	46	57	72	83
East North Central:											
1946	2,812	24	54	71	146	248	282	388	422	542	483
1945	1,053	10	17	19	27	51	113	121	189	177	222
1944	1,714	21	58	63	111	143	178	215	271	321	255
1943	1,136	8	4	12	21	46	79	144	241	249	273
West North Central:											
1946	4,397	45	98	213	328	556	703	696	604	490	550
1945	390	5	7	14	8	15	29	33	49	97	83
1944	551	9	8	25	22	28	54	67	104	77	112
1943	875	9	15	12	40	61	117	118	131	183	138
South Atlantic:											
1946	882	54	39	42	54	55	32	55	63	52	55
1945	809	23	42	68	55	45	78	76	86	80	71
1944	1,886	123	126	128	136	167	167	195	214	205	187
1943	130	1	6	9	7	5	8	7	10	8	10
East South Central:											
1946	734	40	26	59	52	36	91	71	72	68	46
1945	472	25	35	26	42	28	35	47	37	30	39
1944	798	37	91	90	101	84	67	53	56	48	57
1943	176	6	5	6	14	11	5	29	20	14	12
West South Central:											
1946	1,494	80	107	109	121	122	110	129	103	76	102
1945	969	30	57	78	58	58	78	79	86	60	52
1944	361	17	26	18	22	27	23	16	11	14	17
1943	1,516	137	148	148	141	122	119	104	117	81	90
Mountain:											
1946	1,087	29	39	75	76	100	101	147	126	131	122
1945	280	1	3	13	16	18	29	17	35	55	59
1944	117	6	2	1	4	4	9	12	16	12	15
1943	464	2	9	11	4	29	23	43	47	123	93
Pacific:											
1946	1,533	19	35	41	72	78	142	191	238	261	186
1945	552	18	29	30	31	31	59	49	43	60	70
1944	467	11	18	18	26	30	31	47	27	33	30
1943	1,686	75	90	116	110	124	120	194	187	149	144

[1] A similar table for earlier weeks appeared in Public Health Reports for Sept. 6, 1946.

Measles.—The number of cases of measles dropped from 10,863 during the preceding 4-week period to 3,058 during the current period. The number was, however, about 25 percent above the 1945 figure for the corresponding period and almost 15 percent above the 1941–45 median. Of the nine geographic sections, five reported an excess over the preceding 5-year median.

DISEASES BELOW MEDIAN PREVALENCE

Diphtheria.—For the 4 weeks ended September 7 there were 844 cases of diphtheria reported as compared with 1,221 for the corresponding 4-week period in 1945 and a 5-year median of 957 cases. The incidence was relatively high in the New England, Middle Atlantic, East North Central, and Pacific sections; about normal in the West North Central and Mountain sections, and considerably below the the normal seasonal expectancy in the South Atlantic and South Central sections. For the second consecutive 4-week period since September 1944 the current incidence was less than that of the corresponding period of the preceding year, and for the first time since March 1945 the incidence for a current 4-week period fell below its preceding 5-year median. The rising tide of diphtheria which has been in progress for the last 2 years seems to have started to recede.

Meningococcus meningitis.—The incidence of this disease (218 cases) was lower than the 1941–45 median, which was represented by the 1945 report (299 cases). The numbers of cases reported in the New England, West North Central, South Atlantic, and Mountain sections were about normal, but in the other five geographic sections the incidence was comparatively low. For the country as a whole the current incidence was the lowest since 1942 when 187 cases were reported for the corresponding 4 weeks.

Scarlet fever.—The number of cases (2,163) of scarlet fever reported for the current 4-week period was less than 65 percent of the incidence for the corresponding period in 1945 and about 80 percent of the 1941–45 median. In the West North Central and Mountain sections the incidence was higher than the preceding 5-year median, but in all other sections the incidence was relatively low. For the entire country the current incidence is the lowest in the 18 years for which these data are available.

Smallpox.—The number of cases (4) of smallpox was the lowest reported during any 4-week period on record. Two of the reported cases occurred in Ohio, one in Wisconsin, and one in Idaho. The 1941–45 median for this period was 11 cases.

Typhoid and paratyphoid fever.—The number of cases of these diseases was also relatively low, 507 cases being reported for the 4 weeks ended September 7 as compared with 671 for the corresponding 4 weeks in 1945 and a preceding 5-year median of 759 cases. In the North Atlantic and Mountain sections the numbers of cases were somewhat above the normal seasonal incidence, but in all other sections the incidence was below normal.

Whooping cough.—The number of cases (7,686) of whooping cough was less than 90 percent of the incidence during the same period in 1945 and about 70 percent of the 1941–45 median. The incidence

was normal in the New England section, but considerably below the preceding 5-year medians in all other sections. For the country as a whole the current incidence was the lowest in the 9 years for which these data are available

MORTALITY, ALL CAUSES

For the 4 weeks ended September 7 there were 31,589 deaths from all causes reported to the Bureau of the Census by 93 large cities. The preceding 3-year average for the corresponding weeks was 31,825 deaths. The number of deaths was lower than the average in the first, third and fourth weeks of the current period, and higher than the 3-year average in the second week of the 4-week period. In 1945 the total number of deaths reported for the corresponding 4 weeks was 31,548.

DEATHS DURING WEEK ENDED SEPTEMBER 7, 1946

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Sept. 7, 1946	Corresponding week, 1945
Data for 92 large cities of the United States:		
Total deaths	7,877	8,087
Average for 3 prior years	7,776	
Total deaths, first 36 weeks of year	327,895	323,899
Deaths under 1 year of age	675	615
Average for 3 prior years	618	
Deaths under 1 year of age, first 36 weeks of year	22,877	21,702
Data from industrial insurance companies:		
Policies in force	67,323,407	67,334,914
Number of death claims	8,303	9,463
Death claims per 1,000 policies in force, annual rate	6.4	7.3
Death claims per 1,000 policies, first 36 weeks of year, annual rate	9.7	10.3

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED SEPTEMBER 14, 1946

Summary

The incidence of poliomyelitis declined for the country as a whole for the fourth consecutive week. A total of 1,623 cases was reported, as compared with 1,726 last week and a 5-year (1941–45) median of 962. The highest weekly incidence reported so far this year was 1,814 cases for the week ended August 17, as compared with 1,683 cases for the peak week of 1944 (September 2). Decreases were recorded currently in all of the nine geographic divisions except the New England and Pacific. Of the 39 States reporting 5 or more cases and showing changes, 20 recorded an increase of 123 cases, while 19 reported a decline of 216. The 25 States reporting more than 15 cases are as follows (last week's figures in parentheses): *Increases*—Massachusetts 33 (16), New Jersey 16 (15), Ohio 55 (52), Michigan 74 (55), Iowa 42 (30), Kansas 64 (50), Florida 17 (16), Louisiana 21 (16), Texas 28 (25), New Mexico 19 (15), Washington 40 (28), Oregon 17 (12), California 153 (146); *decreases*—New York 87 (101), Pennsylvania 19 (20), Indiana 29 (47), Illinois 193 (199), Wisconsin 121 (130), Minnesota 187 (199), Missouri 95 (120), North Dakota 35 (66), South Dakota 19 (45), Nebraska 38 (40), Arkansas 19 (33), Colorado 65 (72). The total for the year to date is 15,777, as compared with 8,009 and 12,412, respectively, for the corresponding periods of last year and 1944, and a 5-year median of 7,812.

Of the total of 273 cases of diphtheria reported, as compared with 221 last week and a 5-year median of 310, Texas reported 35, New York 24, California 18, and Mississippi 14. The cumulative total is 10,828, as compared with 9,750 for the corresponding period last year. The largest numerical increases over 1945 have been in the Middle Atlantic (562) and the East North Central (693) areas. A combined increase of 2,275 has been reported in 27 States and the District of Columbia, offset in part by a decrease of 1,197 in 20 other States, notably Texas (306), Alabama (123), South Carolina (117), Michigan (92) and California (90).

Deaths recorded for the week in 93 large cities of the United States totaled 8,607, as compared with 7,914 last week, 8,238 and 7,817, respectively, for the corresponding weeks in 1945 and 1944, and a 3-year (1943–45) average of 8,023. The cumulative figure is 337,587, as compared with 333,343 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended Sept. 14, 1946, and comparison with corresponding week of 1946 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	Sept. 14, 1946	Sept. 15, 1945		Sept. 14, 1946	Sept. 15, 1945		Sept. 14, 1946	Sept. 15, 1945		Sept. 14, 1946	Sept. 15, 1945	
NEW ENGLAND												
Maine	1	1	0				35	2	3	0	1	1
New Hampshire	0	0	0				4	1	1	0	0	0
Vermont	1	2	0				7	6	4	0	0	0
Massachusetts	4	1	2				29	40	31	0	1	3
Rhode Island	0	0	0		11		4	3	3	2	0	0
Connecticut	3	0	0		1	1	8		5	1	1	1
MIDDLE ATLANTIC												
New York	24	10	8	[1] 4	[1] 1	(1)	67	23	32	4	9	9
New Jersey	3	4	2	3	1	4	9	18	19	2	2	2
Pennsylvania	10	3	5	1	1		32	43	26	6	8	8
EAST NORTH CENTRAL												
Ohio	6	6	6	3	2	2	35	2	12	1	1	3
Indiana	3	5	4	4		4		5	4	2	2	1
Illinois	11	0	8	2	2	2	14	42	20	2	8	8
Michigan [2]	5	16	4	1	2	2	11	43	43	1	4	4
Wisconsin	0	1	0	9	17	16	21	19	40	0	1	1
WEST NORTH CENTRAL												
Minnesota	3	4	4				1	2	4	1	1	0
Iowa	0	3	3				3	1	2	1	2	0
Missouri	3	4	3	1	1		1	4	3	0	4	2
North Dakota	1	2	1				1	1		0	0	0
South Dakota	0	7	3					2	2	0	3	0
Nebraska	2	4	4				2		1	0	0	0
Kansas	10	6	3	1			9	6	5	0	3	1
SOUTH ATLANTIC												
Delaware	0	0	0				2			0	0	0
Maryland [2]	7	7	1	1			9	1	5	1	0	0
District of Columbia	0	0	0				5	2	1	0	0	0
Virginia	10	18	7	109	123	74	12	1	5	3	3	3
West Virginia	3	14	8				2		2	1	4	2
North Carolina	10	53	40				5	1	7	1	0	1
South Carolina	1	17	19	39	89	123	1	12	6	0	1	1
Georgia	13	33	24	13	6	7	7	3	3	0	1	0
Florida	10	5	4		1	1	2	1	4	1	1	1
EAST SOUTH CENTRAL												
Kentucky	7	15	8					5	5	0	1	1
Tennessee	5	31	14	5	2	6	2	3	5	0	3	3
Alabama	12	30	19	25	28	10	3		2	3	1	1
Mississippi [2]	14	18	12							2	2	0
WEST SOUTH CENTRAL												
Arkansas	8	13	11	6	15	7	10		4	0	1	1
Louisiana	5	13	6	8	11	3				3	2	1
Oklahoma	3	5	7	8	20	8	4	2	2	0	0	0
Texas	35	54	30	328	517	259	14	31	28	3	8	2
MOUNTAIN												
Montana	1	0	0	12	16		13	6	3	1	0	0
Idaho	2	2	0	3			6	20	1	3	1	0
Wyoming	0	0	0		1	1	2	1	1	0	0	0
Colorado	3	4	4	16	2	6	2	7	4	0	0	0
New Mexico	3	2	2			1	3	1	1	0	0	0
Arizona	2	2	1	18	15	34	20		3	0	0	1
Utah [2]	1	0	0		25		2	20	8	0	0	0
Nevada	0	0	0							0	0	0
PACIFIC												
Washington	5	2	3				4	66	15	0	3	2
Oregon	5	5	2		3	4	17	14	14	0	1	1
California	18	24	16	3	10	14	47	101	74	5	9	9
Total	273	446	310	623	923	657	487	561	561	50	93	93
37 weeks	10,828	9,750	8,541	194,096	74,222	84,051	641,115	103,585	540,807	4,666	6,495	6,495

[1] New York City only.
[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended Sept. 14, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [3]		
	Week ended—		Median, 1941–45	Week ended—		Median, 1941–45	Week ended—		Median, 1941–45	Week ended—		Median, 1941–45
	Sept. 14, 1946	Sept. 15, 1945		Sept. 14, 1946	Sept. 15, 1945		Sept. 14, 1946	Sept. 15, 1945		Sept. 14, 1946	Sept. 15, 1945	
NEW ENGLAND												
Maine	2	8	2	23	8	8	0	0	0	0	2	0
New Hampshire	11	1	1	4	2	1	0	0	0	0	0	0
Vermont	1	0	2	5	2	2	0	0	0	0	0	0
Massachusetts	33	45	28	43	42	59	0	0	0	3	1	6
Rhode Island	4	0	0	2	3	3	0	0	0	0	1	1
Connecticut	6	15	15	8	12	12	0	0	0	1	3	1
MIDDLE ATLANTIC												
New York	87	148	109	53	87	79	0	0	0	4	6	7
New Jersey	16	87	41	27	25	21	0	0	0	7	6	4
Pennsylvania	19	95	63	51	67	57	0	0	0	11	7	9
EAST NORTH CENTRAL												
Ohio	55	30	30	47	67	64	2	0	0	9	7	7
Indiana	29	8	8	17	15	21	0	0	0	3	6	2
Illinois	193	66	52	32	50	49	1	0	0	3	2	6
Michigan [2]	74	16	20	32	44	39	0	0	0	4	2	3
Wisconsin	121	39	18	27	23	36	0	0	0	1	0	1
WEST NORTH CENTRAL												
Minnesota	187	25	24	12	20	20	0	0	0	0	1	1
Iowa	42	46	13	12	13	13	0	0	0	2	2	1
Missouri	95	24	4	14	14	18	0	0	0	1	1	4
North Dakota	35	1	1	0	4	4	0	0	0	0	0	0
South Dakota	19	0	1	0	2	4	0	0	0	0	0	0
Nebraska	38	18	11	5	12	8	0	0	0	0	0	0
Kansas	64	8	9	22	19	22	0	0	0	3	3	3
SOUTH ATLANTIC												
Delaware	0	1	1	3	1	1	0	0	0	0	0	0
Maryland [2]	5	8	8	13	23	16	0	0	0	1	1	4
District of Columbia	0	5	3	2	4	4	0	0	0	0	0	0
Virginia	7	19	11	26	32	27	0	1	0	1	6	6
West Virginia	7	3	1	28	54	48	1	0	0	1	9	6
North Carolina	8	4	4	33	59	40	0	0	0	0	5	5
South Carolina	0	5	3	1	12	8	0	0	0	1	1	5
Georgia	9	2	4	5	13	15	0	0	0	1	7	7
Florida	17	11	4	4	7	5	0	0	0	0	2	1
EAST SOUTH CENTRAL												
Kentucky	3	2	5	14	18	24	0	0	0	2	8	9
Tennessee	8	15	11	20	21	28	0	0	1	2	63	10
Alabama	10	3	3	8	15	23	0	0	0	2	9	5
Mississippi [2]	14	3	3	7	12	11	0	0	0	1	3	5
WEST SOUTH CENTRAL												
Arkansas	19	5	5	1	7	4	0	1	1	3	9	9
Louisiana	21	6	2	2	7	5	0	0	0	4	4	6
Oklahoma	11	20	2	2	10	6	0	0	0	5	6	5
Texas	28	44	10	24	51	18	0	0	0	13	15	15
MOUNTAIN												
Montana	6	10	3	4	1	9	0	0	0	1	0	0
Idaho	3	2	1	2	2	3	3	0	0	3	1	0
Wyoming	10	1	0	0	3	2	0	0	0	0	0	0
Colorado	65	16	7	10	7	12	0	0	0	2	1	1
New Mexico	19	2	2	3	13	2	0	0	0	2	2	3
Arizona	5	1	1	2	0	1	0	0	0	14	1	1
Utah [2]	7	22	3	3	5	5	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	40	25	14	7	9	12	0	0	0	0	0	1
Oregon	17	1	6	8	9	9	0	0	0	2	1	1
California	153	46	25	82	97	68	0	0	0	1	4	5
Total	1,623	962	962	751	1,023	949	7	2	3	114	208	208
37 weeks	[4]15,777	8,009	7,812	89,227	138,197	101,240	286	277	619	3,000	3,504	4,008

[2] Period ended earlier than Saturday.

[3] Including paratyphoid fever reported separately, as follows: Massachusetts (salmonella infection) 3; New Jersey 1; Ohio 2; Maryland 1; Georgia 1; Louisiana 1; Texas 1; Colorado 1; Oregon 2.

[4] Corrected report: Poliomyelitis, Arkansas, week ended August 24, 37 cases (instead of 35). New Mexico, 2 cases deducted by change of diagnosis.

Telegraphic morbidity reports from State health officers for the week ended Sept. 14, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended Sept. 14, 1946							
	Week ended—		Median, 1941–45	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Sept. 14, 1946	Sept. 15, 1945		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	16	32	24								1
New Hampshire			2								
Vermont	19	22	22								
Massachusetts	143	170	170								1
Rhode Island	45	13	23								
Connecticut	49	36	36								5
MIDDLE ATLANTIC											
New York	146	403	319	1	13					2	6
New Jersey	147	201	183		1	1				1	1
Pennsylvania	125	185	196				1	1			1
EAST NORTH CENTRAL											
Ohio	87	107	139		2	1					2
Indiana	13	20	20				1				2
Illinois	170	117	139	9	1			1	1		11
Michigan [1]	268	172	188	1	4						3
Wisconsin	283	61	204								6
WEST NORTH CENTRAL											
Minnesota	18	20	37	1							1
Iowa	20	9	9	3							4
Missouri	17	17	17				1	1	1		3
North Dakota	1	4	5								
South Dakota		5	11								
Nebraska			2								
Kansas	21	38	38				1				10
SOUTH ATLANTIC											
Delaware	5	3	2								
Maryland [1]	43	42	46			1					
District of Columbia	2	6	14					1			
Virginia	36	48	47			49		4	3		1
West Virginia	19	5	18								
North Carolina	74	73	73	1				3	3	4	
South Carolina	9	84	69		4					1	
Georgia	13	19	10	3	2				2	17	1
Florida	20	5	5	1						11	1
EAST SOUTH CENTRAL											
Kentucky	16	18	40		2			1		1	1
Tennessee	21	22	36			2	1		4	2	
Alabama	4	20	22							8	
Mississippi [1]								1	1	5	7
WEST SOUTH CENTRAL											
Arkansas	10	4	18						2	2	1
Louisiana	4	7	2	1	2					13	2
Oklahoma	13	17	6	2			1				1
Texas	150	135	99	4	189	16			1	29	13
MOUNTAIN											
Montana	9	1	34				1				1
Idaho	11	10	5		1						
Wyoming	3	3	13								
Colorado	9	38	38								3
New Mexico	14	8	8			1					
Arizona	3	3	10			27	2				
Utah [1]	13	4	14								
Nevada			1								
PACIFIC											
Washington	5	27	36								1
Oregon	18	15	15				1				
California	73	114	179	1	1		7	1		2	8
Total	2,185	2,363	2,772	28	222	98	17	14	18	98	98
Same week, 1945	2,363			37	748	391	69	10	14	174	104
Average, 1943–45	2,328			38	541	300	35	[4] 10	12	[4] 168	
37 weeks: 1946	72,285			2,062	12,164	4,932	463	512	684	2,478	3,638
1945	93,369			1,353	18,768	7,945	424	414	564	3,356	3,434
Average, 1943–45	102,070		[4] 133,994	1,378	15,614	6,700	474	[4] 416	541	[4] 2,796	

[1] Period ended earlier than Saturday.

[4] 5-year median, 1941–45.

Leprosy: New York 1 case; Texas 1 case.

WEEKLY REPORTS FROM CITIES

City reports for week ended Sept. 7, 1946

This table lists the reports from 88 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	2	0	2	0	1	0	0	3
New Hampshire:												
Concord	0	0	------	0	------	0	0	2	0	0	0	------
Vermont:												
Barre	0	0	------	0	------	0	0	0	0	0	0	------
Massachusetts:												
Boston	4	0	------	0	7	0	10	8	5	0	0	13
Fall River	0	0	------	0	------	0	2	0	1	0	0	3
Springfield	0	0	------	0	------	0	0	2	2	0	0	9
Worcester	0	0	------	0	2	0	8	6	1	0	1	32
Rhode Island:												
Providence	0	0	1	0	17	0	0	2	1	0	0	16
Connecticut:												
Bridgeport	0	0	------	0	1	0	3	1	0	0	1	------
Hartford	0	0	------	0	1	0	0	0	0	0	0	3
New Haven	0	0	------	0	3	0	0	0	0	0	0	2
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	0	1	0	3	0	2	0	0	2
New York	6	0	4	1	15	2	30	57	25	0	13	40
Rochester	0	0	------	0	2	0	0	4	2	0	0	------
Syracuse	2	0	------	0	------	0	0	5	2	0	0	2
New Jersey:												
Camden	2	0	------	0	------	1	1	2	0	0	1	------
Newark	0	0	------	0	4	0	0	0	3	0	0	20
Trenton	0	0	------	0	------	0	1	0	0	0	0	------
Pennsylvania:												
Philadelphia	1	0	1	1	13	2	17	2	3	0	2	22
Pittsburgh	0	0	------	0	3	1	2	7	1	0	1	7
Reading	0	0	------	0	2	0	0	0	0	0	0	5
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	1	1	------	0	0	6	1	0	0	10
Cleveland	1	0	------	0	12	0	3	24	5	0	0	16
Columbus	0	0	------	0	------	0	2	1	1	0	0	11
Indiana:												
Fort Wayne	0	0	------	0	------	0	0	0	1	0	0	2
Indianapolis	1	0	------	0	------	0	0	11	2	0	0	7
South Bend	0	0	------	0	------	0	0	2	0	0	0	------
Terre Haute	0	0	------	0	------	0	1	0	0	0	0	------
Illinois:												
Chicago	1	0	------	0	1	2	14	62	15	0	0	81
Springfield	0	0	------	0	------	0	2	1	0	0	0	------
Michigan:												
Detroit	2	0	------	0	3	0	1	24	10	0	1	48
Flint	0	0	------	0	1	0	2	2	2	0	0	2
Grand Rapids	0	0	------	0	------	0	1	7	4	0	0	10
Wisconsin:												
Kenosha	0	0	------	0	------	0	0	5	0	0	0	5
Milwaukee	0	0	------	0	2	0	1	16	7	0	0	69
Racine	0	0	------	0	2	0	0	3	0	0	0	5
Superior	5	0	------	0	------	0	0	3	0	0	0	2
WEST NORTH CENTRAL												
Minnesota:												
Duluth	4	0	------	0	------	0	0	13	0	0	0	------
Minneapolis	1	0	------	0	------	0	2	34	2	0	0	------
St. Paul	0	0	------	0	2	0	4	18	0	0	0	4
Missouri:												
Kansas City	0	0	------	0	------	0	0	21	0	0	0	4
St. Joseph	0	0	------	0	------	0	0	0	0	0	0	------
St. Louis	0	3	1	1	------	2	9	41	3	0	0	3

City reports for week ended Sept. 7, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha	1	0	------	0	-------	1	2	24	1	0	0	1
Kansas:												
Topeka	1	0	------	0	-------	0	2	0	1	0	0	------
Wichita	0	0	------	0	1	0	3	0	0	0	0	1
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	-------	0	2	0	1	0	0	1
Maryland:												
Baltimore	4	0	3	2	1	0	4	2	6	0	0	30
Cumberland	0	0	------	0	-------	0	0	0	0	0	0	------
Frederick	0	0	------	0	-------	0	0	0	0	0	0	------
District of Columbia:												
Washington	0	0	------	0	-------	0	5	3	4	0	0	3
Virginia:												
Lynchburg	1	0	------	0	-------	0	0	0	0	0	0	------
Richmond	0	0	------	0	4	0	3	1	0	0	0	6
Roanoke	0	0	------	0	-------	0	0	0	0	0	1	------
West Virginia:												
Charleston	0	1	------	0	-------	0	0	0	0	0	0	------
Wheeling	0	0	------	0	-------	0	0	2	0	0	0	------
North Carolina:												
Wilmington	0	0	------	0	-------	0	2	0	0	0	0	------
Winston-Salem	0	0	------	0	2	0	0	0	3	0	0	5
South Carolina:												
Charleston	0	0	------	0	-------	0	3	0	0	0	0	------
Georgia:												
Atlanta	1	0	------	0	-------	0	0	0	1	0	0	------
Brunswick	0	0	------	0	-------	0	1	0	0	0	0	------
Savannah	0	0	------	0	2	0	1	0	0	0	0	------
Florida:												
Tampa	1	0	------	0	-------	1	2	0	1	0	0	------
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	-------	0	3	5	1	0	0	2
Nashville	0	0	------	0	-------	0	5	2	0	0	0	------
Alabama:												
Birmingham	0	0	3	0	-------	0	1	2	0	0	0	------
Mobile	0	0	------	0	-------	0	2	1	0	0	1	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	1	0	------	0	1	0	0	3	0	0	0	2
Louisiana:												
New Orleans	1	0	2	0	-------	0	6	3	1	0	0	------
Shreveport	0	0	------	0	-------	0	3	1	0	0	0	------
Texas:												
Dallas	0	0	------	0	-------	0	1	0	2	0	0	3
Galveston	0	0	------	0	-------	0	1	0	0	0	0	------
Houston	1	0	------	0	-------	0	3	1	1	0	0	------
San Antonio	2	0	------	0	-------	0	2	1	0	0	0	1
MOUNTAIN												
Montana:												
Billings	0	0	------	0	-------	0	0	0	0	0	0	------
Great Falls	0	0	------	0	2	0	1	1	0	0	0	------
Helena	0	0	------	0	-------	0	0	0	0	0	0	------
Missoula	0	0	------	0	-------	0	1	0	3	0	0	------
Idaho:												
Boise	0	0	------	0	-------	0	2	0	0	0	0	------
Colorado:												
Denver	1	0	3	1	1	0	1	19	2	0	0	11
Pueblo	0	0	------	0	-------	0	2	1	0	0	1	------
Utah:												
Salt Lake City	0	0	------	0	2	0	3	1	0	0	0	3

City reports for week ended Sept. 7, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	2	0	------	0	1	1	2	0	1	0	1	4
Spokane	0	0	------	0	--------	0	2	10	0	0	0	1
Tacoma	0	0	------	0	--------	0	0	0	0	0	0	1
California:												
Los Angeles	3	0	------	0	3	1	1	65	0	0	0	------
Sacramento	1	0	------	0	1	0	0	0	0	0	0	1
San Francisco	2	0	------	0	4	3	2	4	7	0	1	2
Total	53	4	19	7	121	17	195	544	138	0	25	536
Corresponding week, 1945	63	------	23	6	133	------	251	------	206	0	18	718
Average, 1941–45	50	------	27	[1] 7	[2] 150	------	[1] 217	------	230	0	32	899

[1] 3-year average, 1943–45.
[2] 5-year median, 1941–45.

Dysentery, amebic.—Cases: Boston 1; New York 1; Indianapolis 1; Detroit 1; Atlanta 1; Los Angeles 1.
Dysentery, bacillary.—Cases: Rochester 3; Chicago 1; Detroit 4; Charleston, S. C., 3; Los Angeles 1.
Dysentery, unspecified.—Cases: San Antonio 4.
Rocky Mountain spotted fever.—Cases: Wilmington, Del., 1; Lynchburg 1.
Typhus fever, endemic.—Cases: Savannah 1; Tampa 2; Nashville 2; Mobile 2; New Orleans 2; Dallas 1; Galveston 1; San Antonio 1; Los Angeles 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,322,800)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	10.5	0.0	2.6	0.0	86	0.0	65.3	54.9	29	0.0	5.2	212
Middle Atlantic	5.1	0.0	2.3	0.9	19	2.8	25.0	35.6	18	0.0	7.9	45
East North Central	6.1	0.0	0.6	0.6	13	1.2	16.4	101.6	29	0.0	0.6	163
West North Central	14.1	6.0	2.0	2.0	6	6.0	44.2	303.7	14	0.0	0.0	26
South Atlantic	11.6	1.7	5.0	3.3	15	1.7	38.1	13.3	27	0.0	1.7	75
East South Central	0.0	0.0	17.7	0.0	0	0.0	64.9	59.0	6	0.0	5.9	12
West South Central	14.3	0.0	5.7	0.0	3	0.0	45.9	25.8	11	0.0	0.0	17
Mountain	7.9	0.0	23.8	7.9	40	0.0	79.4	174.7	40	0.0	7.9	111
Pacific	12.7	0.0	0.0	0.0	14	7.9	11.1	124.9	13	0.0	3.2	14
Total	8.1	0.6	2.9	1.1	18	2.6	29.7	82.9	21	0.0	3.8	82

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (in ectoparasites).—Under date of September 12, 1946, plague infection was reported in a pool of 48 fleas recovered from 22 rodents trapped on May 22, 1946, in District 14B, Makawao District, Island of Maui, T. H.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended August 24, 1946.—During the week ended August 24, 1946, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		7		32	44	8	11	26	25	153
Diphtheria		5		27	6	2		1	4	45
Dysentery:										
Amebic								1		1
Bacillary				3						3
German measles					4		1	1	6	12
Influenza		3			3					6
Measles		3	2	25	70	15	28	49	5	197
Meningitis, meningococcus		1			3		1			5
Mumps		1	1	14	87	11	42	14	40	210
Poliomyelitis	6	2	6	134	28	3	2	6	2	189
Scarlet fever		5	6	30	21	2	5	8	1	78
Tuberculosis (all forms)		1	7	140	27	24	15	7	39	260
Typhoid and paratyphoid fever				15	3				16	34
Undulant fever				1	1			3		5
Venereal diseases:										
Gonorrhea	6	12	19	111	135		48	56	100	487
Syphilis		11	5	91	65		16	4	48	240
Whooping cough		5	1	62	49	2		4		123

JAMAICA

Notifiable diseases—4 weeks ended August 24, 1946.—For the 4 weeks ended August 24, 1946, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities
Cerebrospinal meningitis		1
Chickenpox	3	3
Diphtheria		3
Dysentery, unspecified	2	2
Erysipelas		6
Leprosy		6
Puerperal sepsis		2
Tuberculosis (pulmonary)	33	58
Typhoid fever	6	97
Typhus fever (murine)	6	1

JAPAN

Notifiable diseases—4 weeks ended July 27, 1946, and year to date.—For the 4 weeks ended July 27, 1946, and for the year to date, cases of certain notifiable diseases were reported in Japan as follows:

Disease	4 weeks ended July 27, 1946	Total cases reported for the year to date
Cholera	253	364
Diphtheria	2,312	29,956
Dysentery	11,691	16,748
Encephalitis, Japanese "B"	33	[1] 56
Malaria	6,467	[1] 9,745
Meningitis, epidemic	83	1,011
Paratyphoid fever	1,083	4,491
Scarlet fever	136	1,173
Smallpox	114	17,606
Typhoid fever	4,000	25,736
Typhus fever	507	30,446

[1] For the period June 2, 1946 to date.

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

China.—Cholera has been reported in China as follows: Anhwei Province—August 1–10, 1946, 711 cases, 28 deaths; Chekiang Province—August 1–10, 1946, 615 cases, 74 deaths; Kiangsu Province—July 21–31, 1946, 144 cases, 11 deaths; August 1–10, 1946, 101 cases, 11 deaths; August 11–20, 1946, 96 cases, 6 deaths reported in Nanking.

Plague

Indochina (French).—For the month of August 1946, 44 cases of plague were reported in French Indochina.

Smallpox

Belgian Congo.—During the week ended August 17, 1946, 885 cases of smallpox (alastrim) were reported in Belgian Congo.

Typhus Fever

Greece.—For the week ended September 7, 1946, 44 cases of typhus fever were reported in Greece.

Indochina (French).—For the month of August 1946, 50 cases of typhus fever were reported in French Indochina.

Italy—Milan Province.—Typhus fever has been reported in Milan Province, Italy, as follows: August 1–10, 1946, 103 cases; August 11–20, 1946, 140 cases.

Yellow Fever

Peru—San Martin Department—Lamas.—For the month of January 1946, 1 death from yellow fever (confirmed in May 1946) was reported in Lamas, San Martin Department, Peru.

FEDERAL SECURITY AGENCY

UNITED STATES PUBLIC HEALTH SERVICE

THOMAS PARRAN, *Surgeon General*

DIVISION OF PUBLIC HEALTH METHODS

G. ST. J. PERROTT, *Chief of Division*

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It contains (1) current information regarding the prevalence and geographic distribution of communicable diseases in the United States, insofar as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other important communicable diseases throughout the world; (2) articles relating to the cause, prevention, and control of disease; (3) other pertinent information regarding sanitation and the conservation of the public health.

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